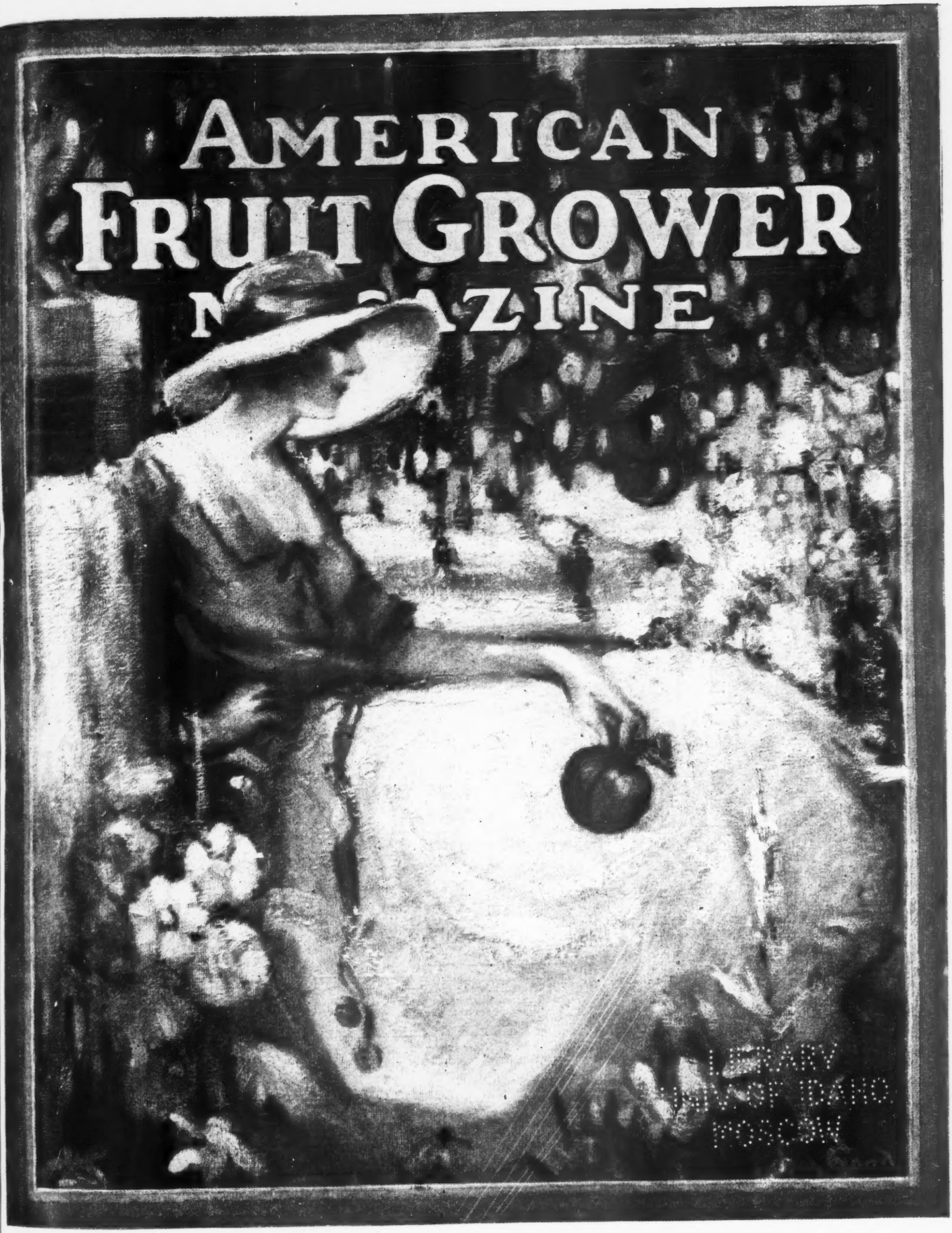
AMERICAN FRUIT GROWER MAGAZINE



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Reduce Insect Damage by Fall Treatment

By W. P. Flint
Illinois State Natural History Survey

WHEN we think of combating orchard insects, it brings to mind the picture of a spray rig or duster. However, spraying is not the only method which should be used in this fight. In order to keep insects under control, it is necessary to keep up the fight during all seasons of the year. Few of our orchard insect pests can be entirely controlled by cleaning up in and about the orchard during the fall of the year, but much can be accomplished in this way to lessen the numbers of the insects and to reduce their damage the next season.

During the average year, our worst insect pests in apple, pear, peach, plum and cherry orchards are the San Jose scale, the plum curculio, the codling moth, the apple flea weevil, the peach tree borer, the shot-hole borer, the round headed apple tree borer and the fruit tree leaf roller. Taking up these insects in the order mentioned, let us see what, if anything, can be done towards preventing their damage during the fall months.

San Jose Scale

In the fall of the year, the San Jose scale will be found on the trees in all stages. Under Ohio, Indiana and Illinois conditions, the scale will continue to reproduce in most orchard sections up to about the first of November, or in the northern part of these states, to the first of October. Active spraying operations against the scale cannot begin until the foliage has dropped sufficiently so that we can apply the spray directly to the twigs and branches where the scale is going through the winter. However, the best and most effective spraying cannot be done if the trunks of the trees are covered with water sprouts, or weeds and grass are standing between the trees in the orchard. In order to permit the most effective spraying, the water sprouts should be pruned off the trees, and the grass and weeds growing between the trees that will interfere with the sprayer and movement of the hose should be removed. Where heavy infestations of scale exist, which it has been found difficult to control, the trunks of the trees should be scraped to remove the larger bark scales before the spray is applied.

Plum Curculio

It has long been known that the plum curculio is, as a rule, more abundant in orchards close to woodlands, or in those along which there are bushy fence rows or gullies. Some reduction in curculio damage may be accomplished by cleaning up and burning over such hibernating places during the fall of the year. Such clean-up measures also will have an effect in reducing the hibernating quarters of the curculio during the coming season.

Codling Moth

The codling moth, or apple worm, is one of the insects which has been increasingly abundant during the past several seasons and has caused far more than the usual amount of damage. As is well known, this insect goes through the winter in silken cocoons spun mainly under the loose bark on the trunk and larger branches of apple and pear trees. In orchards where there are fallen branches of trees, piles of boards, old crates, boxes, baskets, or other accumulations of rubbish, many of the overwintering worms will find shelter in such materials.

A thorough clean-up of such orchards should be made during the fall or early winter. All such trash should be piled and thoroughly burned before the approach of warm weather in the spring.

When we go into an orchard during the summer to look for the presence of codling moth, we are almost sure to find the heaviest infestation of this insect around the packing sheds or tool houses where baskets, picking bags and crates used in picking and bringing in the crop are stored. It is often possible to find 100 or more codling moth cocoons in a single picking basket which has been stored. It is almost impossible to clean them out of the baskets or crates. The adult moths can be prevented from flying from the sheds to nearby trees in the orchard if the windows in the packing shed are kept screened and the doors kept closed during the time when the moths are emerging in the spring.

If it is not possible to screen the shed to prevent the escape of the moths in the spring, the overwintering worms in the baskets, crates, etc., may be killed by placing the containers in a small tight room and heating to 125 degrees Fahrenheit for a period of three hours. This will kill all the worms in the baskets and can usually be done at small expense. The baskets may be fumigated with cyanide if the heat treatment cannot be given.

Another effective means of controlling codling moths is by collecting and killing the worms that collect under the bands placed around the trees. After the middle of August, very few of the worms that come down the trees transform to moths during the same season. If trees are scraped about the middle of August and banded with a six-inch strip of common tar paper, most of the worms coming down the trees will collect under these bands and there spin their cocoons in preparation for passing the winter. If bands are put on the trees about the middle of August, the worms will collect upon them, and it is not necessary to kill the worms under such bands until November or December, after the apples have been picked and the other fall work around the orchard has been completed, or, in fact, at any time before the first of the following April.

For banding, black tar paper bands about six to eight inches wide have been found superior to burlap. Where such bands have been tried side by side in orchards, the tar paper bands have attracted nearly twice as many codling moths as were found under the burlap bands. A single thickness of tar paper is sufficient. The ends of the band should be lapped about three inches and can be held in place by a single large bill poster's tack. The tar paper bands are cheaper than burlap, much easier to put on, and the worms under them are more easily located. The bands may be prepared by sawing a roll of tarred paper into the desired width with a hand saw.

At least 50 to 75 per cent of the worms that would normally pass the winter in the orchard may be collected and killed under such bands. In order to get the maximum number of worms under the bands and the real benefit from their use, all loose bark must be scraped from the trees to which they are applied. This may be done with a floor scraper, a section of iron hoop or an old hoe. Care should be used not to scrape into the live bark and to remove all the loose bark scales as high as one can reach. If these bark scales are not removed, many of the worms will seek shelter under them instead of going under the bands. The expense of banding a tree will not run over five or 10 cents, including the material used for banding.

Codling moth infestation has been increased in some orchards by permitting the accumulation of piles of cull apples in and around the orchard. It is quite a common practice to haul the culls from a packing shed to some gully or wash in the orchard and dump them, allowing them to remain and rot over winter. It frequently happens that from 10 to 50 per cent of these culls contain larvae of the

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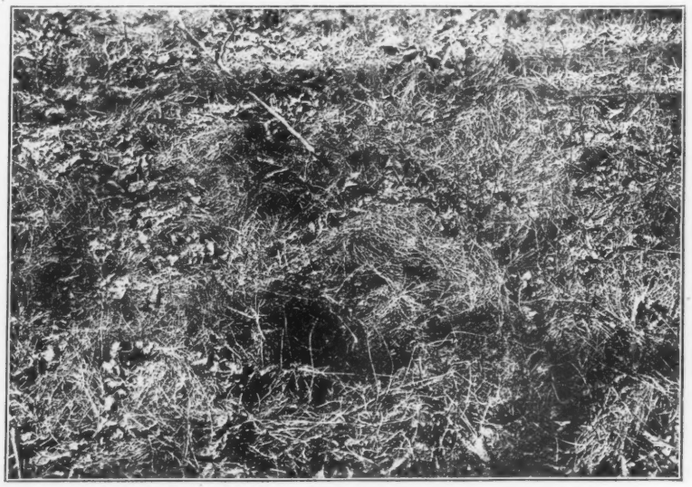

Heavy grass mulches mixed with apple leaves are common in orchards in the fall and winter. The apple leaf weevil winters in such places in large numbers

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Fall Campaign Against Fruit Diseases

By L. R. Hesler
University of Tennessee

IT MAY be assumed that spraying will be the chief means of treatment against diseases of fruits for some time to come. Spraying has been used for years and there is little reason to hope that this well-known method of plant disease control can be discarded altogether. Psychologically it has been said, spraying grew out of the idea that when plants were wet they looked better, and further, that if they looked better, they must feel better. This psychology still lurks in the minds of all of us, although many important fruit troubles are kept under control by spraying. Some minds seem to have gone further and to have assumed that spraying is complete in itself, is entire in its action and is curative in its effects! It is true that sprayed plants are generally in better condition than those not sprayed, yet at times, spraying as an operation to reduce disease falls short of expectations of even conservative and reasonable growers.

Fall Work Helps

Any remedy for an ill, if it is to remain in good graces, must be effective. Furthermore, it must show sustained effectiveness. It must even show an improved efficiency in keeping with the increasing demand of an educated public. Spraying, then, must be effective, and what was regarded as good results from the use of sprays some years ago would now not be acceptable. The fruit grower who sets the pace, and those who would keep abreast, must give attention to those phases of disease control which will improve the results from orchard, vineyard and plantation spraying. The present schedule of pest control occupies a prominent place in the spring and summer orchard work. Perhaps at such busy seasons little else could be added. But it would seem that in the fall and early winter there are some things that could be done to reduce the damage from disease the following year.

Plant Sanitation Indispensable

The problem is largely one of sanitation. Experience has taught that certain epidemics of human diseases can be handled easily, if not wholly avoided, by the enforcement of public and private hygiene. Hygiene, in its broad sense, plays a great role in human prophylaxy and it ought to receive equal attention in the case of plants. This hygiene is based, of course, on a knowledge of plants—their organs, their mode of growth—as well as on that of the environment in which they live.

An unavoidable environmental factor in the life of a fruit producing plant is that of disease itself. But disease is in reality only a sickness, a condition, for every case of which there is a cause. Many of these causal agents are themselves small, parasitic plants which are living organisms. They show the usual cycle of growth and development much like that of animals: egg, embryo, youth, adult, reproduction of their kind, old age and death. The interception of this cycle in the fall prevents overwintering. In general, these parasitic organisms hibernate with the living fruit plant or with some of its detached parts, such as old leaves, mummified fruits, branches and the like. These are commonly the sources of outbreaks of disease which occur during the growing season. Removing these sources means removal of much of the hibernating organism and the consequent breaking of its cycle. While complete removal does not appear to be practicable, yet there is measurable compensation in the practice of plant hygiene. An invaluable aspect lies in the fact that the spray program of the following year is augmented. The burden of giving the fruits protection by fungicides is thereby decidedly lightened. This is the chief basis for the contention that anything be done in the fall and winter toward minimizing disease.

Fall Work on Apple Rot Diseases

From among the two or three dozens of our common apple diseases, we may examine four or five to see what can be done in the fall season. The black rot and bitter rot diseases are similar in pertinent respects: (1) they are caused by fungi; (2) the causal fungi overwinter on the wood and old decayed fruits; (3) during the growing season each attacks the new crop directly from their above-mentioned quarters; and (4) each is controllable by summer spraying. It is important, then, to rid the orchard of old, mummified apples. Especially is this true of those which are clinging to the tree; those on the ground are less dangerous. Likewise, dead twigs, diseased bark areas and body cankers should receive due attention when the pruning program is being executed. Apple twigs and limbs are subject to the attacks of a number of parasites which rest over winter in the bark, and so their removal while quiescent assists in securing health for the crop that is to come. Suppose every mummy, every dead twig and every dead area of the bark be removed in the late fall, then a potent outbreak is avoided. As has been suggested, however, complete elimination of all infective material is practically impossible, but the summer campaign against such diseases can thus be rendered less difficult.

Sanitation Aids In Apple Blotch Control

In areas south of a line drawn through central Ohio, Indiana and Illinois, blotch is one of the most destructive apple diseases. Elsewhere it is locally severe. The fungus rests through from summer to spring on the twigs and smaller limbs. Water sprouts are especially preferred by the fungus. In late spring and early summer it finds its way to new fruits, leaves and woody parts. Trees which are not well sprayed are liable to injury of a highly objectionable type. Experienced apple sprayers agree that the disease is amenable to control by the application of fungicides, and it is also the common observation that the success of the sprays for blotch are determined to a large degree by the amount of overwintering fungous material. Spraying and blotch canker eradication go hand in hand: proper spraying gradually eliminates the fungus from the woody parts; eradicating cankers and cankered twigs renders the spraying more efficient. The cankers are small and numerous, so that generally speaking, it is not practicable to remove these bark infections from large trees. In newly planted or young orchards, on the other hand, it is profitable to cut out cankers from the larger limbs. Also, smaller diseased twigs should be removed along with the water sprouts of older trees. Of course, the usual pruning of older trees is useful, not only in reducing the number of cankers, but in opening up the trees. Thus, the trees may be better aerated and the blotch-susceptible parts may be more thoroughly sprayed.

Upper right.—Bitter rot on the apple crop results from spores that are spread from hanging mummies and dead bark. Center.—The brown rot fungus spreads to blossoms and young fruit in the spring from old rotten peaches of the previous year's crop. Such peaches should be removed. Lower left.—Apple blotch mars the fruit of many apple varieties. A good fall clean-up and a good summer spraying program will control it

Autumn Steps Against Apple Scab

The fungus responsible for scab lives superficially, during the growing season, on fruits and leaves and occasionally on blossoms and twigs. Along the New England coast the fungus may hibernate on twigs; the removal of such parts is important wherever practicable. Hanging and fallen fruits rarely, if ever, carry the organism over winter. The old dead leaves, on the other hand, constitute the chief if not the only place of hibernation. It is from these fallen leaves that ascospores are liberated in the spring to initiate the scab outbreak. The question is often raised as to whether destruction of these old leaves during the fall or winter will not at least partially control scab. Theoretically, it is possible to prevent scab by eliminating dead leaves on the ground. But there are certain practical difficulties: (1) every leaf would have to be destroyed, since a single leaf may bear hundreds of spores; (2) it is difficult to remove old leaves from a sod orchard or one in which a cover crop has been sown; and (3) the fungus may come over from a neighbor's orchard. In some cases, it has seemed that spraying for scab is more effective where the dead leaves are eliminated. In other instances, the measure has not appeared profitable. The grower is advised to study his own conditions and then proceed as these conditions dictate.

Spraying the leaves on the ground to kill the fungus is a measure with some logic behind it. Recent reports along this line from Australia are of a promising nature.

Remove Red Cedars

In many apple sections cedar rust is troublesome. The rust fungus exhibits the striking peculiarity of living for several months on the red cedar and then going to the apple. It happens to spend the winter on the cedar. Removal of red cedars within a radius of one-half mile to a mile from the orchard is a completely satisfactory remedy. This measure, to be effective, must be employed before the fungus is ready to make its flight to the apple; this takes place in the spring. Why not remove the cedars in the fall?

Apple Root Troubles

During the growing season certain trees show thin, pale foliage; trees so affected seem to be slowly dying. Such trees probably have root-rot. Of course, the long lived character of fruit trees makes removal of entire plants the last resort, but sometimes it is best to remove one tree to save the threat of others. Such affected trees should be closely observed during the summer and if removal is contemplated, the fall of the year is quite the proper time. When in doubt about removal, trenching may be employed as a tentative measure. Dig a trench three to three and one-half feet deep around the tree on a line approximately at the tips of the branches. Throw the dirt toward the inside of the circle. Any new roots that grow into the ditch should be kept cut off. Trenching, of course, quarantines the diseased tree, since root-rot fungi spread to healthy trees through the soil.

Peach Disease Work Begins in Autumn

The fall of the year is an excellent time to begin the campaign against the common diseases of the peach. Leaf curl may be disposed of entirely,

(*Concluded on page 23*)

Rambles of a Horticulturist

By C. E. Durst

WHEN the pomological party stopped at Boise, Idaho, the good folks there started us in at the very beginning. They took us first up the Boise Valley 22 miles to the great Arrowrock Dam. This dam, built with government aid, impounds the "white gold" that makes agriculture possible in the Boise Valley. The dam is 348.8 feet high and 1100 feet wide at the top. It forms a reservoir 18 miles long.

The aim is to fill the reservoir, if possible, from the melting snows in the mountains. Unfortunately, the snowfall was light last winter and there were fears at the time of my visit that there would be insufficient water to meet the needs of the season. The reservoir was being lowered at the rate of 18 inches a day at the time. The water supply ran short two years ago, it is stated.

General view of Arrowrock Dam and reservoir in the Boise Valley

Water Flow Regulated

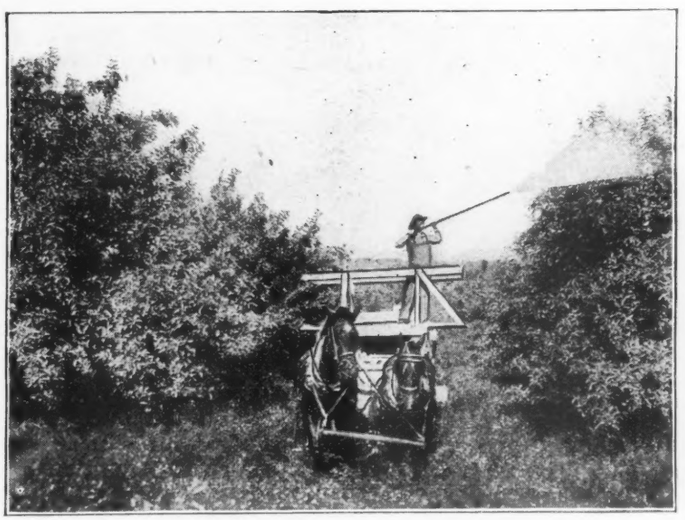
The water flow is regulated through circular outlets. These appeared to be about 18 inches in diameter at a distance, but they are actually four feet four inches in diameter. The water is dropped directly into the river bed, making a fairly large, swift flowing stream. The land to be irrigated is located at various points along the valley. At intervals the water is led off from the river through open ditches, wooden conduits or steel or concrete pipes. These are built with only a slight fall, and because of the rapid fall of the river, the water is soon brought sufficiently above the river bed to be fed by gravity to the areas under irrigation.

From the main supplies, the water is led off through laterals which run along the high places. The amount of water which may be used by each grower is regulated by openings of a given size for a certain head of water. The miner's inch is the standard employed. There are differences in the amount of water used by the different growers, and also differences in the cost of irrigation water, due to prior rights, riparian rights, etc., being possessed by some growers. The cost of water ranges from almost nothing to $60 an acre a year. The land is not altogether level and in most cases the water is distributed in the orchards through small furrows. When cover crops like alfalfa are grown, the furrows are opened before the seed is sown and with a little hand labor from time to time they are kept sufficiently open for satisfactory results.

The Boise River Valley has about 70,000 acres under irrigation. A relatively small proportion is planted to fruit. The valley opens into the Snake River Valley at its lower or western end. The Snake River Valley grows more fruit than the Boise River Valley. Payette, located on the Snake River, ships more fruit than the remainder of southern Idaho. Its shipments during 1925-26 amounted to about 3500 cars of apples and 400 cars of prunes. The Snake River Valley is irrigated by water taken by gravity and by pumps from the Snake River, which furnishes a large supply throughout the season.

Principal Fruits Grown

The principal fruits grown in the Boise and Snake River valleys are apples, prunes, sweet cherries, peaches and pears. Some small fruits are also grown. Practically no new orchard plantings have been made recently. The Winesap is the leading apple variety, though Romes and Jonathans are also grown in quantity. The prunes are practically all of the Italian variety and are mostly shipped fresh.



Spraying scene in the 300-acre apple orchard of D. T. Sleep, Ontario, Ore.

On the second day, our hosts took us to a number of orchards in the Boise and Snake River valleys to observe field conditions. The first stop was made at Henry McBirney's place. He has 80 acres of Italian prunes that promised to yield 15 to 20 tons per acre. A yield of eight to 10 tons an acre is considered good.

The J. R. Field Orchards

The eastern growers were particularly interested in the cherry orchard of J. R. Field, located near Emmett. Mr. Field is regarded as the most successful cherry grower in the district. He was picking Lamberts at the time, and they were of exceedingly fine quality and large size. He has seven and one-half acres of this variety and they were producing at the rate of two tons an acre. The trees are planted 20 by 25 feet. They are 15 years old, have a trunk diameter of 10 to 12 inches and a height of about 20 feet. Mr. Field fertilizes heavily, using both manure and chemical fertilizers. He applies the manure immediately after the crop is picked. He sprays twice during the winter for scale with lime-sulphur and four times during the summer for slugs. Brown rot and curculio are not troublesome.

Mr. Field uses a horse-drawn skid, shown in the accompanying picture, for hauling the cherries out of the orchard. He pays one cent a pound for the picking. At the barn the field crates are loaded on trunks and are then hauled to Emmett, where they are packed in a packing house operated exclusively by Mr. Field. Girls are employed for the packing, and they are able to pack an average of from 30 to 40 crates a day. The cherries are first sorted carefully. They are packed in flats holding 15 pounds. The facing layer, placed first in the bottom of the crate, is handled with extreme care, even the stems being placed with exactness. When the bottom layer is placed, the crate is filled with cherries, following which they are leveled with the hands. The covers are then nailed on the crates. Before leaving the house, every crate is weighed to make certain that it contains 15 pounds net. The cherries are shipped in refrigerator cars holding 15 tons. Mr. Field has developed special markets for his product. New York was offering the best prices at the time of my visit.

Mr. Field also has some sweet cherries of other varieties as well as a good sized orchard of Montmorencies. The latter were expected to yield five tons an acre this year.

Skid used by J. R. Field, Emmett, Idaho, for hauling empty crates to cherry orchards and filled crates out of the orchard

Visits to Emmett, Plymouth and Payette

Leaving the Field packing house, we passed through the cherry, apple and peach district around Emmett and visited the fruit section near Plymouth. Here we briefly inspected the air storage and evaporating plant formerly owned by the Plymouth Growers' Exchange but which has passed into the hands of a private company as a result of failure of the co-operative.

Lunch was served by the Kiwanis Club at Payette. In the afternoon the famous apple and prune section around Payette was visited. Apples are the leading fruit and develop exceedingly good color in this vicinity. It is common for Romes to show 66 per cent color—33 per cent is considered good in some northwestern sections. The warm days and cool nights are, no doubt, largely responsible. There are no Negroes, Japanese or Chinamen in the valley. Severe winds and lightning are unknown, it is stated.

The D. T. Sleep Orchards

The car in which I was riding lost its way, and we did not visit some of the orchards scheduled. However, we had a most interesting visit to the orchard of D. T. Sleep at Ontario, Ore., which is just a few miles over the Idaho boundary. Mr. Sleep has 300 acres of apples and 70 acres of Italian prunes. He bought the place four years ago from two business men in St. Paul who had spent $265,000 in developing the same. The place is well equipped and in splendid condition. The trees are in fine condition, as indicated by the bright healthy bark and the ivory colored fruit. The apples are planted 35 by 35 feet. The trees are pruned to the modified leader system and they have rather open tops—no doubt this accounts for the fine set of fruit all over the trees, inside as well as out. Mr. Sleep expects 100 cars of apples this year. The fruit has all been thinned to five to six inches apart. There were 20 girls at work thinning when I visited the place. It is Mr. Sleep's aim to complete the thinning every year by June 15, since he believes early thinning conserves the nutrition of the tree for the remaining fruits and also assists in bringing about a better set of fruit buds for the following crop.

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"Cheaper Than Ever Before"

IN THE Chicago Tribune of August 12 there was a report of an interview in which Arthur R. Rule is said to have told President Coolidge some things about the fruit and vegetable industry.

Among other things, the report of the interview stated that "the consumer will find fruit this year cheaper than ever before and it would be still cheaper were growers able to market all they grow instead of being compelled by inadequate marketing facilities to leave apples and peaches to rot on the ground."

The conditions do not justify these statements. The statistics show that larger apple crops than this year's were produced in 1895, 1896, 1904, 1912, 1914, 1915 and 1920. The peach crop was larger in 1915 than it will be this year. The grapefruit crop of Florida, and the orange crops of California and Florida are reported to be about the same as last year. The total prune crop is about 71,000,000 pounds under the 1925 crop and surplus. There is no raisin carry-over. The lemon, grape and pear crops are the only important fruit crops which promise to be larger than we have had before.

We must bear in mind also that our transportation and refrigeration facilities have been steadily improving, that co-operative marketing of perishables has been gaining in extent, and that population has been increasing. All of these factors should play a part in making fruit marketing conditions and prices better this year than they have been in other years of large fruit crops. The general farm crops do not promise a bumper crop this season, and this circumstance should improve the marketing situation for perishables. The conditions certainly do not justify Mr. Rule's conclusion that consumers may expect their fruit "cheaper than ever before" this year. Even if the circumstances should warrant such a statement, it would be extremely unwise policy for the manager of a marketing association to make such an assertion.

We have been wondering how much effect Mr. Rule's statement will have on the retail prices of fruits for the remainder of the season. A report of an interview with the President is certain to be widely read. People are inclined to accept statements made under such conditions without question. Persons who give advice to the President are supposed to know what they are talking about. When people read that someone who is supposed to be a marketing expert has told the President that consumers may expect fruit to be "cheaper than ever before," they (the people) will immediately begin to shape their thoughts in the direction of lower prices for fruits. Buyer psychology plays an important part at times in influencing the prices of perishables, as every marketing expert knows. We wonder how much money the American fruit growers and produce dealers will pay for Mr. Rule's statement before the season is past.

We take issue with another viewpoint expressed by Mr. Rule. The report of the interview stated that fruit "would be still cheaper were growers able to market all they grow instead of being compelled by inadequate marketing facilities to leave apples and peaches to rot on the ground." In other words Mr. Rule takes the view that if growers were better organized they could market a larger proportion of their crops and such improved marketing facilities would give consumers their fruit at still lower prices. We cannot understand such reasoning. We always thought that better marketing facilities would enable growers to obtain better prices for their crops. There is no argument in favor of co-operative marketing if Mr. Rule's line of reasoning is correct. If that is the viewpoint which Mr. Rule is trying to put into operation in his conduct of the Federated, then we can understand why his organization has been losing so heavily in tonnage and in grower support.

Mr. Rule also proposed that Intermediate Credit Banks and credit organizations be authorized to make loans to growers during the production period. The Federal Land Banks are already loaning money on farm lands. The Intermediate Credit Banks are making loans on crops during the harvesting and marketing period and are extending their activities as fast as the growers do their part in forming the necessary organizations. Many leaders in agriculture believe that the industry already has plenty of credit facilities. Additional credit will simply enable many growers to become more deeply obligated to Wall Street capitalists. In the case of many farmers and fruit growers, the loaning of more money to them would simply delay and magnify the inevitable crash. Fruit growers and farmers need a governmental policy that will insure them a more equitable break in the distribution of the national income and not more credit.

We don't place much weight on Mr. Rule's interview, except the part pertaining to prices "cheaper than ever before" for fruit. That part, we believe, may exert considerable influence. For the good of the industry, we urge growers and marketing leaders to give out the facts about the fruit industry to dealers and consumers in order that any possible bad effects resulting from the report of this interview may be overcome.

Read the Articles on Fall Control Methods

WE WISH to call particular attention to the articles in this issue by W. P. Flint and L. R. Hesler on fall control methods for insects and diseases. If our readers could be in our office and see the hundreds of letters that come in about insects and diseases, they would appricate more fully the desirability of using fall control methods. Many of these letters ask how pests can be controlled which have already done their damage. Of course, nothing can be done in such cases except to tell the writers how they may conduct their operations so as to prevent similar damage in the future.

For instance, take peach leaf curl. Every summer we receive numerous letters about this disease. Peach leaf curl can be effectively controlled by one application of fungicidal spray in the fall or early spring before the spores on the twigs have germinated. Applications made after this time or during the growing season do no good whatever in controlling the disease.

We have many insects and diseases in the fruit industry whose presence is often unsuspected until the damage is done. Many of these can be materially checked by proper fall control methods. The articles by Dr. Flint and Dr. Hesler are very timely, in our opinion. If growers will employ the methods outlined, insect and disease damage can be materially reduced. Read these articles.

Smaller Cities Offer Room for Expanding Peach Market

PEACH GROWERS are advised by the United States Department of Agriculture to develop the small and medium-sized markets. Records on the distribution of 11,922 cars, or 88 per cent of the shipments from Georgia in 1924, show that approximately 90 per cent of the peaches went to cities of more than 100,000 population, while only seven per cent went to cities with populations between 25,000 and 100,000. Only one per cent went to cities with populations between 8000 and 25,000, and less than one per cent went to cities or boroughs of less than 8000 population.

Smaller markets were nevertheless utilized by the Georgia growers in 1924 much more than in former years. This action, although it did not wholly prevent loss on the movement of an exceptionally large crop, kept the losses down considerably. Up to August 16 last year only 3086 cars of Georgia peaches were unloaded in New York City compared with 3233 unloaded there in 1921, and shipments were 3000 cars lighter. New York received only 23 per cent of Georgia's carload peach shipments in 1924 compared with 30 per cent in 1921, and receipts in Philadelphia and Chicago were similarly reduced. In general, the movement to western markets was heavier and that to eastern markets lighter.

Further effort in this direction, says the department, ought greatly to assist in the profitable distribution of the peach crop. An idea of what might be done can be gained from the fact that, while practically every city of more than 100,000 population within shipping distance received Georgia peaches in 1924, only one-half of the cities of from 25,000 to 100,000 population in the distribution area received Georgia peaches in carlots. Among the available markets having populations between 8000 and 25,000, less than one-eighth received carload lots of peaches from Georgia.

Peach growers in New York State utilized the smaller markets to somewhat better advantage than did those of Georgia. Only 64 per cent of New York's 1924 peach shipments went to cities of more than 100,000 population, and 17 per cent found a market in cities of between 25,000 and 100,000 population. Eleven per cent of the shipments went to cities of from 8000 to 25,000, and eight per cent to cities and towns of less than 8000 population. New York peaches in carlots reached 107 cities of between 8000 and 25,000 population. Georgia, on the other hand, with total shipments almost four times as large as those of New York, supplied only 72 cities of that size. A majority of the peach producing states disposed of from 30 to 65 per cent of their shipments in 18 large cities.

While large cities will probably continue to be the important carlot markets for peaches, the advantage of developing the smaller markets, says the department, should not be overlooked.

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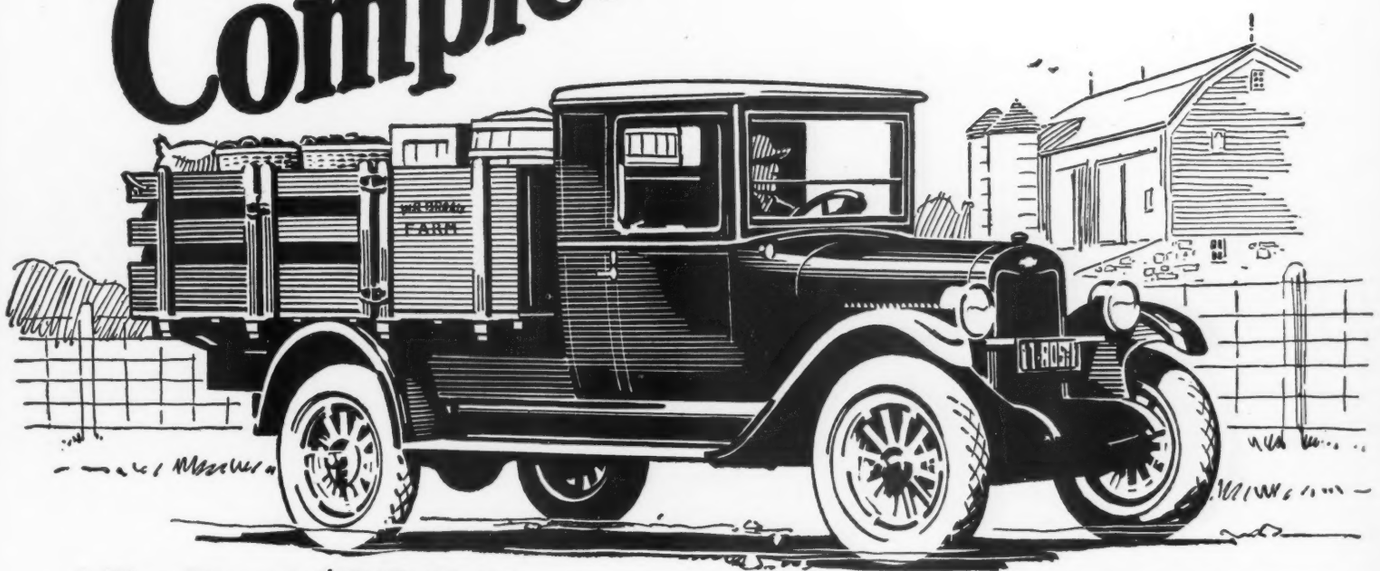
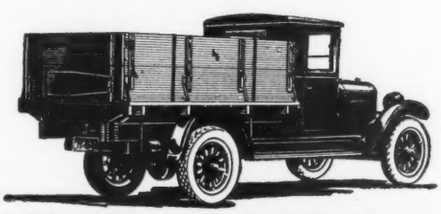


1-Ton Truck Stake Body $680 f.o.b Flint complete Mich



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1-Ton Truck (complete) With Panel Body,	$755
1-Ton Chassis and Cab only,	$610
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Operation of an Apple Packing House

By J. A. Barron
Fennville Fruit Exchange

THE OPERATION of an apple packing house with a capacity of from four to 10 cars daily is in some respects similar to the running of a small factory; but an apple packing house offers some complications that are not found in most factories. At the beginning of the fruit season the packing house manager must organize a packing crew of from 50 to 75 people. He is able to offer only a few months' work and he must, therefore, pick up any labor that is available. Usually there are a few of the crew that return season after season and these may be called trained help. The balance of the crew, however, must be hurriedly trained. In Michigan there are a number of central packing house associations that handle little fruit except winter apples that mature in October. It is a problem with them to obtain sufficient help when they can offer employment for only five or six weeks. Naturally, under such conditions, there must be more or less inefficiency.

The Standard of Output

In most apple districts, there are state grading laws that govern the sorting and facing. These laws set a minimum standard, but competition is so keen that most shippers are working for a better pack. The problem of the association manager is to get out a pack that is at least as good as the average and keep the packing cost down to a point where it compares favorably with those of other concerns. In fact, it is not unusual for the growers who are members of a co-operative packing house association to want to compare their sales with the highest shown by any similar association and to compare packing costs with the association that does the packing the cheapest. In our packing house at Fennville, we first determine a standard of packing that we think will meet the approval of our customers, and we then do all we can to get the cost of packing to this standard down to a minimum. In looking backward, it would seem that there has not been much improvement in barrel packing in the last decade, but there has been a marked advance in the bushel basket pack. Boxes have been used very little in Michigan, and we are not at all familiar with their use.

At Fennville our method of packing a barrel of A-grade apples is to give it a double face and a ring packed tail. For the B-grade, we use a single face and a ring packed tail. During the last few years we have used trade-marked paper wrappers for the outside tier on the face of the bushel baskets when packing A-grade and ordinary ring facing of the B-grade. As to sorting, we plan to have the fruit so that it will always pass inspection with a reasonable percentage to spare. We can now say that every package of our output must be to the above standard.

Packing House Arrangement

Fixed items of overhead, such as taxes, insurance and depreciation of buildings, must be spread over the packing season of a few months instead of over the entire year, as in the case of a factory running full time. We want to use as much labor saving machinery as practical, but we have figured that if we were running the year around we could afford machines that we cannot use profitably during our short season. The fixed investment would be too high. Conveyors, both gravity and power, grading machines, packing forms, etc., in our opinion are labor savers that can be afforded in most any packing house. A packing house planned to keep the fruit moving from the farmers' delivery towards the car door at all times with ample storage for the unpacked fruit ahead of the graders, and plenty of room behind them for facing, covering, and marking of packages, is ideal. In our opinion, the storage for the packed fruit should be in a separate building or room, if possible, so that the carloading crew will be separated from the packing crew at all times. There is much less noise and confusion in our packing house now than a few years ago, and in 1921, when we installed our present system, we could hardly realize that we were doing as much work as the year before. It seemed too quiet around our plant and there was too little excitement for a real output. At night the figures showed more work done, however.

One of the large handlers of eastern apples says, "From the orchard to iced car or cold storage in 24 hours." No doubt this is best for the fruit, but we have never been able in practice to do this. Our house is so arranged that a little more than a day's run of apples can be stacked up alongside of the gravity conveyors running from the delivery end of the house to the graders, and that allows us to work nearly every day during the apple harvest season in spite of weather conditions. We realize, however, that our customers who are buying apples for cold storage want them handled as promptly as possible, and such fruit has the right of way over varieties that are going out to trade that does not plan to place the fruit in cold storage.

Graders

In looking over equipment in the different Michigan packing houses, we find graders from Ohio, New York, Florida, California and Oregon. Some of these graders are nearly new and some of them are just about worn out and should be replaced with modern machines. Some seemed to be designed with capacity only in mind and do not handle the fruit as gently as it should be handled. After considerable experience with graders, we have concluded that a machine of medium capacity is best fitted for the average Michigan packing house where many varieties from many growers are packed. There is too much wasted time in checking up between lots when the large capacity machines are used. If apples were delivered to our packing houses in large enough lots so that a run on any one lot would consume at least an hour, the big machines would be economical, but it does not pay to attempt to pack lots ranging from 10 to 50 bushels on a grader with an hourly capacity of from 200 to 300 bushels.

Last season we installed a grader made in the Pacific Northwest. This grader sizes on the weight principle and is so arranged that as many as eight sizes can be made from a lot of apples. There are bins for both box and barrel packing. Our original plan was to try boxing some of our best varieties. However, when our fancy winter varieties were being harvested, we were short of help and had to go ahead with the old pack of A and B grades. We found that this grader was of limited capacity but that it did a very good job of sizing and handled the fruit very carefully. Now, we are planning on buying another grader of the same make that has a capacity of from 1200 to 1500 bushels a day and which is arranged for our Michigan A and B grades. We shall use this grader on such tender varieties as McIntosh, Snow and Spy.

Packing Devices

There are a number of clever devices on the market for the facing of bushel baskets. As our packing house was arranged for the grading, filling and facing of bushel baskets, we have been a little slow to try out these devices, feeling that to have to face before the basket was filled would mean an upsetting of this system. It seems that we will have to come to it however, for while our pack has always compared favorably with that from other points in Michigan, we are now willing to admit that the packers using the facing devices are getting out the best looking packages. At the time of writing this article we are undecided between two of these packing forms, and we are hoping that when we do reach a decision it will be a wise one. We hope that in the near future some Michigan packing house will begin to put out fancy McIntosh or Spys packed in tub bushels, sized as uniformly as the western box apples and with paper wrappers or liners used to prevent bruising. One would think that such a pack would command as high a price as any western box.

One of our growers has recently invented an apple barrel facer that promises to save considerable backache and give us a much neater job of facing. We plan to try out this machine during the coming apple season and hope to find it a big improvement over the old system. The facing

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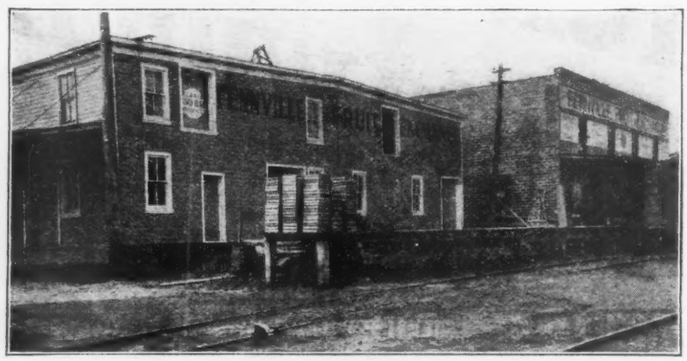
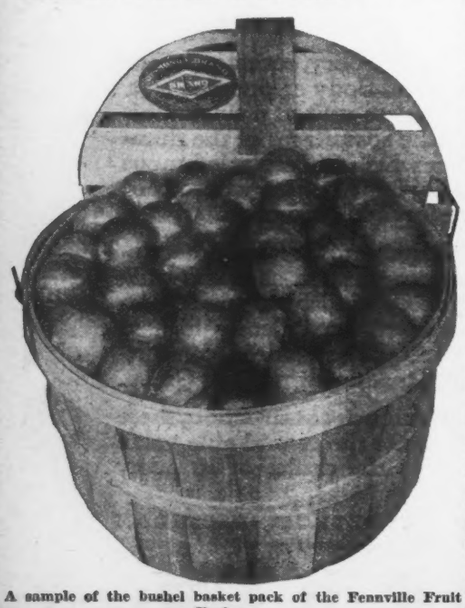


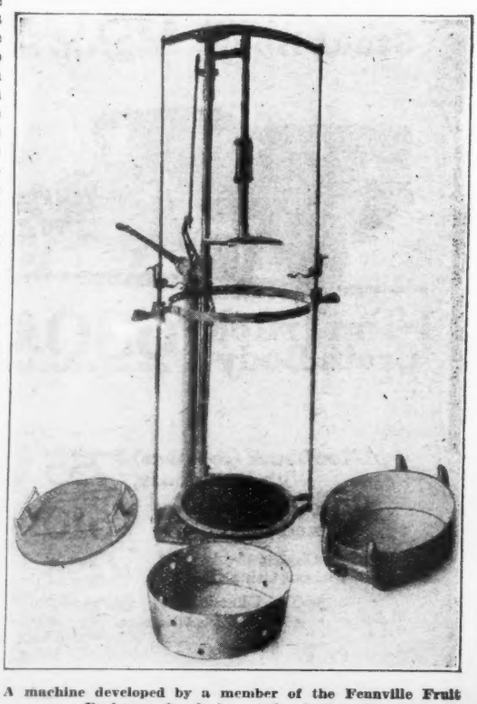
Headquarters of the Fennville Fruit Exchange, Fennville, Mich.

RECORD OF DAILY PACKING HOUSE EARNINGS FOR A BUSY WEEK IN OCTOBER

Crates Packed	Wrapped bushels	Plain bushels	Barrels	Culls	Total Revenue	Payroll	Gain
3262	992	294	406	168	$311.16	$173.90	$137.26
2756	833	485	205	347	255.44	185.57	69.87
2088	629	430	151	237	194.74	175.17	19.57
2127	579	372	197	205	198.50	151.40	47.10
2567	483	445	309	269	248.68	192.07	56.61
2671	133	388	467	287	273.34	196.01	77.33

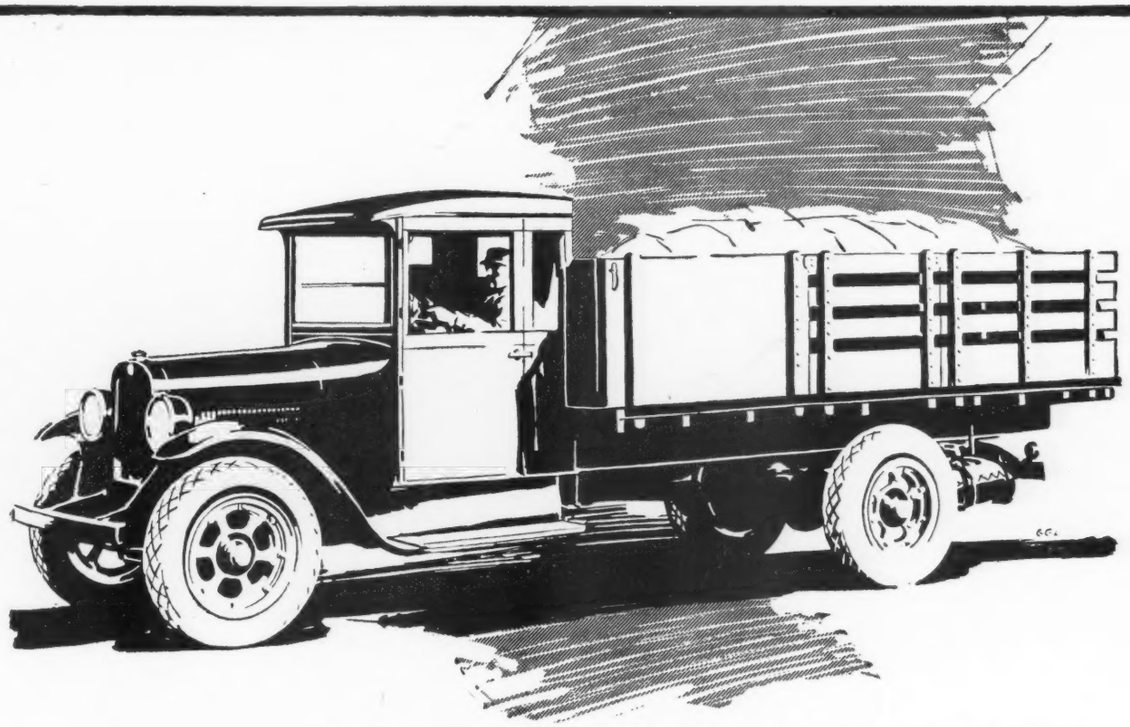


A sample of the bushel basket pack of the Fennville Fruit Exchange



A machine developed by a member of the Fennville Fruit Exchange for facing apples in barrels

ANNOUNCING a Two Ton Truck



And now a Two Ton Truck bearing Graham Brothers name—

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A truck you will want to see!

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$1445
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GRAHAM BROTHERS TRUCKS

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Picking, Handling and Shipping Apples

By T. J. Talbert and F. S. Merrill

University of Missouri

IN THE August issue we discussed the picking and handling of apples preparatory to packing. In this installment we shall give consideration to grades and standards and to other factors connected with the successful handling and marketing of the crop.

Harvesting and Packing Methods

With the barrel, as with other types of packages, the grower has several factors to consider in arranging for his packing operations. Experience has shown that it is probably more efficient and more economical to grade bulk apples in the orchard, the pickers placing the picked fruit directly upon the packing table. Under certain conditions, many growers have come to believe that where the fruit is packed in containers—whether in barrels, baskets or boxes—it is better to use a central location for the packing operations. This may hold true where the fruit is produced on a commercial scale, but it would not be as advantageous for fruit grown on a limited scale.

Grades and Standards for Apples

It will not be our purpose to add to the list of "Prescribed Grades and Standards." The improvements made have been the results of educational work rather than legislation. Nearly all will agree that there is a need for an improvement in our grading. As our methods of production have improved, so there is a tendency towards more careful grading of our fruit. The chief argument for better grades is that it pays, not merely in the satisfaction derived from a good job well done, but in the actual net cash returns.

In the handling of fruit for the market, the commercial growers have a choice of several types of packages, to each of which may be adapted a number of styles of packing. These may call for a different degree of mechanical skill and practice, but from them one may select a combination that will give satisfaction. After a grower has decided upon the manner in which he is best suited to handle his crop, he should decide upon a definite plan of action to which he intends to adhere.

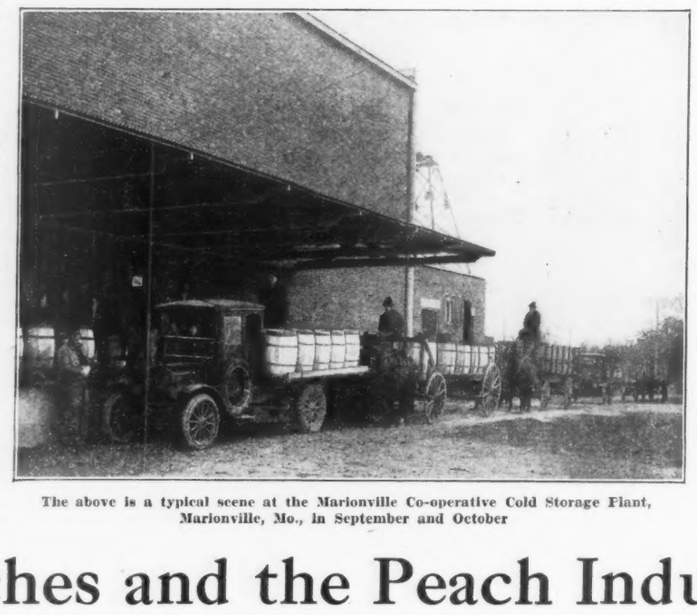
There is no one factor over which the grower has positive control that can so directly influence his results as uniformity. He should reduce his practices to a definite basis and follow them. If he decides on a quality basis, he should endeavor to have all packages uniformly good. If, on the other hand, he decides on a lower standard, let him be consistent in this, too.

The quality of fruit may vary from year to year as regards size, finish and freedom from defects, but the standard for packing should be maintained on a uniform basis regardless of the condition of the fruit. Each package should be as nearly uniform in all respects as possible. Such a standard of packing carried on over a period of years will go far towards establishing a grower in a place of independence as far as marketing his product is concerned.

Growers Accept Uniform Pack

There are many successful growers in Missouri who have as a result of years of experience been thoroughly convinced that a uniform pack pays big dividends. One of our foremost growers states that the uniform quality of his pack has been forced upon him. At first he was somewhat unwilling to accept it. The practice has been, however, the turning point in the successful management of his orchard. With him it is not a problem of marketing now, but of distribution, for the reputation of his pack is well known in the leading markets and fruit buyers compete for his crops. There are many theories advocated in connection with packing and marketing fruit, but the factor of uniformity has passed beyond a theory and is now an accepted fact among apple growers who have been consistent in its use.

The rewards for putting up a uniform pack are not generally manifested until the practice has become well known. To far-seeing producers, it is the ultimate returns that are most important. As the fruit industry is a long-time investment, a policy or program will be of value only insofar as its benefits are enduring. To put the seen before the unseen is business shortsightedness, and the grower whose standards deviate with the season is not building on a permanent foundation. Uniform grading and packing require good judgment and training. An inexperienced or disinterested crew cannot be expected to do good work, and the use of this type of help is often the most expensive as well as very unsatisfactory.



The above is a typical scene at the Marionville Co-operative Cold Storage Plant, Marionville, Mo., in September and October

Appeal of Attractive Packages

A uniform standard for the different operations should be practiced. In selecting facers, the value of uniformity is shown not only in the added attractiveness of the package, but in the ease with which the work may be done. The quality of the fruit goes a long way in establishing values, but the attractiveness of the package and packing may increase the appeal of even high quality fruit. Uniform sizes and uniform color combine two important factors. In tailing, as in facing, the fruit should be selected for uniformity of size and color. A good packer can blend the extremes

(*Concluded on page 20*)

Peaches and the Peach Industry

Third Installment—By H. P. Gould

United States Bureau of Plant Industry

IF ONE were to concede human attributes to the temperature, one might say that it is a dictator—tyrannical, unyielding, persistent, blind, unreasoning—in its relation to peach growing. In its manner of operating, it is, in effect, all of these and a lot more.

The temperature in one form of expression or another is the main determining factor as to where peaches may be grown. It is always operative, never yielding. If its dictates are ignored, the penalty of disaster impends! In other words, the northern limits of peach growing are determined mainly by winter temperatures. Where winter temperatures reach the danger point frequently enough to create a serious hazard, peach growing becomes impracticable.

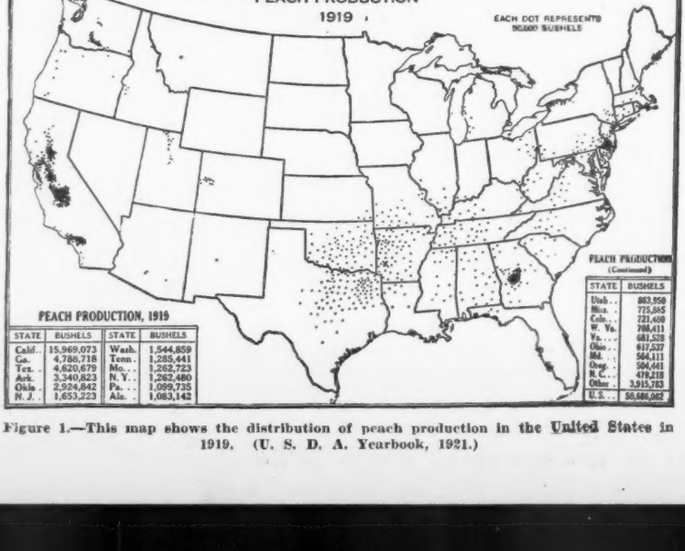
Peen-to Peaches for Hot Regions

That temperature also largely fixes the southern limits of peach growing is less obvious and not so generally appreciated. Perhaps the extension southward as the limits are approached is a gradual fading away, as compared with a more or less sharply defined northern limit. This is a natural consequence. A critically low temperature kills or severely injures. A temperature that is excessively high enfeebles and weakens and gradually inhibits the normal processes of the tree until finally it ceases to function.

In the southern range of peach culture, there is a striking example of varietal adaptability. It is related to, or is a part of, the varietal classification that has been recognized for many years. It was the late Gilbert Onderdonk of Texas who grouped peaches into the Persian, North China (since designated as the Chinese Cling), Spanish, South China (since termed the Honey) and the Peen-to races.

Briefly, it is the varieties of the Peen-to race that have the ability to thrive under the long, hot growing seasons, and the very short dormant periods which characterize the more southern limits of peach growing. Varieties of the Honey race contribute also to these regions. However, even the varieties of these races gradually drop out and peach growing ceases (Figure 1).

In general terms, it may be said that an ideal citrus region is not suitable for peaches, not even for varieties of the Peen-to or Honey races. A good citrus section is one in which the temperature rarely drops below freezing, and when it does, only slightly. Under such temperature conditions, other things being equal, the tendency is for a peach tree to remain in active growth continuously throughout the year, as do citrus and other subtropical trees. That is contrary to the inherent characteristics of any deciduous tree such as the peach. When a deciduous tree tries to be an evergreen and to grow without a period of rest and dormancy, it soon ceases to grow at all. Thus it is that the temperature operating in very different ways limits the range of peach growing both northward and southward.



STATE	BUSHELS	STATE	BUSHELS
Calif.	15,969,073	Wash.	1,544,859
Ga.	4,786,718	Tenn.	1,285,441
Tex.	4,620,679	Mo.	1,262,723
Ark.	3,340,823	N. Y.	1,262,480
Okla.	2,924,842	Pa.	1,099,735
N. J.	1,653,223	Ala.	1,083,142

STATE	BUSHELS
Utah	883,950
Miss.	775,585
Colo.	721,409
W. Va.	708,411
Va.	681,528
Ohio	617,537
Md.	564,111
Oreg.	504,441
N. C.	479,218
Other	3,915,783
U. S.	50,686,062

Figure 1.—This map shows the distribution of peach production in the United States in 1919. (U. S. D. A. Yearbook, 1921.)

Sites, Winter Injury and Spring Frosts

It is helpful to distinguish rather clearly between the terms "location" and "site" as applied to peach orchards. It is not the intention in this article to consider at any length the questions of location. It will suffice to point out that the location has to do with the geographical aspects of the orchard; its place with reference to mountain or lake. Location involves shipping facilities; it may involve even the character of the roads between the orchard and the shipping station or local market.

On the other hand, the site is the place on the farm where the orchard is planted; the very piece of land occupied by the trees. Much of the success of the enterprise depends on the site. If the soil is not suitable, the trees will not grow well; the subsoil is of even greater importance than the surface. The latter can be modified somewhat. The subsoil must remain much as nature left it, except as it may be underdrained if too wet. The subsoil is the medium in which

(*Continued on page 14*)

Government Estimate for Apples

THE GOVERNMENT estimate of the commercial apple crop as of August 1, shows a gain over the report for July of about 2,000,000 barrels. The commercial crop is now estimated at 39,559,000 barrels. The total production last year was 30,364,000 barrels.

The August report gives Washington an output of over 10,000,000 barrels. New York is given a crop of 6,403,000 barrels and the Virginia yield is estimated at 3,107,000 barrels. The estimates by states are as follows:

	Condition Aug. 1. %	Estimated production 1926. Barrels.	Production 1925. Barrels.
Maine	60	520,000	615,000
N. Hampshire	69	225,000	203,000
Vermont	67	135,000	103,000
Mass.	76	775,000	598,000
Rhode Island	73	66,000	53,000
Connecticut	77	274,000	193,000
New York	71	6,403,000	4,980,000
New Jersey	80	854,000	463,000
Pennsylvania	76	1,502,000	813,000
Delaware	94	576,000	256,000
Maryland	79	490,000	274,000
Virginia	76	3,107,000	1,347,000
W. Virginia	63	1,258,000	768,000
N. Carolina	69	238,000	158,000
Georgia	81	130,000	76,000
Ohio	65	749,000	623,000
Indiana	73	223,000	217,000
Illinois	65	1,276,000	1,187,000
Michigan	60	1,428,000	1,448,000
Wisconsin	74	146,000	93,000
Minnesota	70	46,000	29,000
Iowa	77	122,000	66,000
Missouri	53	581,000	622,000
Nebraska	55	73,000	40,000
Kansas	52	296,000	310,000
Kentucky	73	124,000	74,000
Tennessee	72	89,000	42,000
Oklahoma	55	23,000	26,000
Arkansas	60	709,000	775,000
Montana	90	75,000	26,000
Colorado	85	951,000	676,000
New Mexico	68	264,000	202,000
Arizona	80	11,000	9,000
Utah	81	202,000	202,000
Idaho	71	1,329,000	1,327,000
Washington	84	10,091,000	8,868,000
Oregon	95	2,172,000	1,448,000
California	82	2,026,000	1,154,000
U. S.	74.9	39,559,000	30,364,000

Crop Estimates in California and Florida

THE AUGUST 1 crop estimate of the United States Department of Agriculture showed the condition of fruits in California and Florida to be as follows:

CROP CONDITIONS, CALIFORNIA AND FLORIDA, AUGUST, 1926.
(Normal = 100 per cent.)

Crop.	Condition Aug. 1, 1926.	Condition July 1, 1926.	Condition Aug. 1, 1925.	Average Aug. 1 Condition 1916-25.
Almonds, Calif.	90.0	91.0	56.0	68.1
Apricots, Calif.	68.0	66.0	64.0	69.6
Figs, Calif.	90.0	91.0	83.0	91.0
Grapefruit, Fla.	83.0	80.0	83.0	80.2
Lemons, Calif.	92.0	94.0	80.0	77.0
Limes, Fla.	80.0	76.0	80.0	78.0
Olives, Calif.	53.0	58.0	69.0	64.9
Oranges, Calif.	82.0	83.0	84.0	74.8
Oranges, Fla.	87.0	83.0	85.0	83.1
Pineapples, Fla.	65.0	60.0	92.0	....
Plums, Calif.	90.0	92.0	72.0	77.2
Prunes, Calif.	62.0	60.0	65.0	75.1
Walnuts, Calif.	55.0	55.0	94.0	86.2

A New Convenience for Farmers and Fruit Growers

SCIENTIFIC developments have done a great deal to make life easier and better among farmers and fruit growers. Water and sewage systems have been a great help. The telephone entered into farm life so long ago that it is almost forgotten. Electricity is now being made available as a source of light and power on the farms. Good roads and automobiles are shortening the distances and saving a great deal of time for people in the country.

Recently another development has taken place that promises to add still further to the conveniences possible in the country. Apparently, it is now going to be possible for farmers and fruit growers to enjoy the benefits of gas for cooking purposes the same as city folks. A method has been developed whereby the natural gas just as it comes from the wells can be purified and converted by means of pressure to a liquid form and stored or bottled in 10-gallon drums. The preparation will return to the gaseous form as soon as the pressure is released by means of turning a valve. The tanks containing the bottled gas may be stored outside the house or in the basement. They are connected with an ordinary gas stove in the kitchen of the same type as used in the cities, except that they have a slightly different burner.

When the housewife wants gas, she simply turns a valve and holds a lighted match to the burner, the same as the city woman. A quick, hot fire is immediately available. The gas from this product is said to be even better than the average city gas, since the purification makes it practically free from soot of any kind.

An installation consists of a gas stove and two drums. One drum will last an ordinary family a month or so and when it is empty, it is disconnected by means of a simple connection and the other tank is attached. The empty tank is then replaced with a charged one by agents who regularly supply a given territory. The new gas will be furnished to farmers and fruit growers at a price which will be no higher than the rates paid by city folks, it is claimed.

The plates used for printing the cover page of our August issue were loaned to us by the Fruit Trades' Federations, 10 Bridge Street, London, England. The plates have been used by the company in the campaign to promote increased fruit consumption in England.

Unseen Sources of Long Life

An open book to the expert
And revealed to the Owner in terms of Service

The basic sources of motor car value are not always apparent to the eye.

A motor car, like a house, may *look* more substantial than it really is.

But *experts* know. And Dodge Brothers Motor Car, subjected to their sharp scrutiny, has received the unqualified endorsement it so richly deserves.

Electrical Engineers, for instance, will tell you that Dodge Brothers starter and electrical equipment throughout, are exceptionally efficient and dependable.

Metallurgists will confirm the fact that in no other car built is so high a percentage of costly chrome vanadium steel employed.

Tanners will tell you that Dodge Brothers, for their leather upholstery, will accept only a distinctly superior grade of stock.

Upholsterers concede that you will rarely find mohair velvet of equal quality and taste.

Automotive Engineers point to Dodge Brothers one-piece chrome vanadium front axle—a valuable and exclusive feature; to the bearings—bigger and better than strict necessity requires; to the spring leaves and spring clips—chrome vanadium, *every one;* to the motor, connecting rods, crankshaft, transmission, universal joint, drive shaft, differential, rear axle shaft—all made chiefly of chrome vanadium; and to numberless other examples of high engineering standards long ago established and strictly maintained today.

Sources of *long life* and *dependability* that reveal themselves to the owner in terms of upkeep dollars saved, and faithful service over a period of years

Sedan $895—Coupe $845—Touring Car $795
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DODGE BROTHERS
MOTOR CARS

Eyes Smart After Spraying

SOME orchardists find that their eyes smart annoyingly when they retire at night after a day of spraying. A good way to relieve this trouble is as follows: As soon as the smarting commences, turn the face downward and rub the eyes with a dry handkerchief so as to cause tears to flow plentifully. This rubbing will probably make the smarting more severe at first so that the sufferer may be tempted to give up the treatment; if, however, he sticks to it for a few minutes the tears will carry the spray material out of the eyes and relief will come. This method works better than washing the eyes with water or boric acid.—*G. K. E., New Jersey.*

Buckeyes are built in balloon sizes, too

BUCKEYE TIRES, built and guaranteed by Kelly-Springfield, offer generous mileage at low first cost.

In low-pressure sizes as well as the regular cord line, Buckeyes will stand up and deliver service.

Buckeyes are full size, full ply tires, intended for the man who wants good, dependable tires but who does not need the *extra* service he would get from the regular, higher-priced Kelly line.

See the Kelly dealer. He can sell you Buckeyes at prices that will save you money.

KELLY-SPRINGFIELD TIRE CO.
250 West 57th Street New York

BUCKEYE TIRES

Built by Kelly-Springfield

Ohio Growers Meet

THE NORTHERN summer meeting of the Ohio State Horticultural Society was held at the 800-acre orchard of Dr. C. A. Bingham at Chardon, Ohio, on August 13. This orchard proved a most interesting and valuable meeting place. Dr. Bingham's 11-year-old orchard of Grimes and Jonathan is carrying a good crop. Dr. Bingham ringed branches on about 10,000 Baldwin trees in 1925, and the trees thus treated are carrying a crop of about two bushels to the tree on the ringed limbs this year. Those in attendance were greatly interested in this demonstration.

Extensive fertilizer tests, which have been in operation for several years, were also observed. These tests are being conducted in co-operation with the state experiment station, as well as tests in spraying and dusting. A new type of large capacity duster attached to and driven by a tractor was observed in action. Dr. Bingham has just completed a common storage plant with a capacity of 30,000 bushels. A 30,000-bushel cold storage plant is under construction, as well as a packing house with an estimated capacity of 1000 bushels a day. The packing house will be equipped with the latest improvements in grading and sizing machinery.

In addition to the examination of orchards and equipment on the Bingham place, an interesting program was carried out at which leading authorities discussed some of the important problems in the Ohio orchard.

Joint Meeting with Grape Growers

On August 12, the Ohio State Horticultural Society co-operated with the northern Ohio grape growers in holding a meeting and tour at Vermilion, Ohio. A visit was made to the vineyard of Isaac Moes, where C. S. Holland of Ohio State University led a discussion and gave a demonstration on the Kniffin system of grape pruning and training. The next visit was made to the vineyard of F. A. Haber and Son, where G. A. Runner of the Bureau of Entomology discussed spraying equipment. J. H. Gourley of the Ohio Experiment Station gave a talk on "Vineyard Fertilization."

PLANT NOW

Save Time and Money

Trees, Roses and other plants can be planted advantageously in the Autumn. The earth becomes well settled around the roots and the plants get a much earlier start in the Spring than plants get then. Prices now are favorable. We grow and sell direct to consumers at lowest prices. Better stock is not to be had. Fruit Trees, Evergreens, Privet Hedging, Japanese Barberry, Shrubbery, etc. Write for price list. We will both be gainers.

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Established 1899 Westminster, Maryland

The Editor's Mail Box

Portable Spray Outfit for Hillside Orchards

Editor, AMERICAN FRUIT GROWER MAGAZINE: Can you give me any information in regard to a gravity pressure spraying outfit? In this section we have locations for placing our tank 500 to 600 feet above the valleys. Our orchards are located on steep slopes and are difficult to get around in with portable outfits, especially in wet weather. Any information you can supply will be greatly appreciated.—R. L. C., Fordson Farms, West Virginia.

ANSWER: We have not had any experience with gravity pressure spraying outfits for the conditions you describe, and we do not believe gravity could be depended upon to furnish enough pressure for your needs when the water supply is 500 to 600 feet above the orchard. With a height of 600 feet you could secure a pressure of only 260 feet at the spray nozzle. Of course, this is a fairly high pressure, and it would satisfy many growers, but as you are aware, the tendency nowadays is toward pressures ranging from 350 to 500 pounds at the nozzle.

You can determine the pressure you will obtain by multiplying the number of feet of head by 0.434.

While you may not be able to secure the desired results from gravity alone, you can readily obtain the necessary pressure by using a motor and pump at the source of supply, thus forcing the water under pressure into the pipes that extend into various parts of the orchard.

Such stationary spraying outfits, as they are called, are in successful operation in many places. At least half of the orchards in the Wenatchee district of Washington are equipped with this system. Under your conditions a system of this kind should give splendid results. You could undoubtedly spray your orchards quicker and with less cost with a stationary than with a portable outfit.

When these outfits were first used, many growers rigged up their own equipment from motors and pumps bought separately. However, there is a strong tendency at present for growers to buy complete units, as these appear to be giving better satisfaction with little, if any, extra cost. On the attached list you will find a list of companies from which you can purchase stationary spraying equipment.

You will find information about stationary spraying outfits in our magazine for February, 1925, on page 41, and in the issue of February, 1926, on page 5.

In regard to the kind of pipe, standard pipe are ordinarily considered safe for 150 pounds of pressure. However, in practice they usually withstand considerably more than this. Some of the people in the Northwest claim that new pipe will stand 1000 pounds with safety. Second-hand pipe can be depended upon, they claim, to stand 500 to 700 pounds of pressure. You will find an interesting note about pipe pressures in our issue of April, 1926, on page 16. Of course, the very best kind of pipe would be extra heavy pipe and extra heavy malleable fittings.

Starting Strawberries from Pot Grown Plants

Editor, AMERICAN FRUIT GROWER MAGAZINE: I should appreciate it if you would give me information about starting strawberries from pot grown plants. When should the plants be set? Do you prefer paper or wood bands or clay pots? How far apart should I set plants of a vigorous growing variety like Gandy?—A. H., Illinois.

ANSWER: The starting of strawberry plantations from pot grown plants is often practiced in intensive culture and in home gardens, but it is seldom employed in large commercial operations. If you have rich soil and if you will be able to give the plants the very best attention, you will find the method all right; otherwise, I would advise you to set the plants in the spring.

Paper or wood bands may be used successfully, but I like the clay pots best. These should be plunged into the soil beneath the runner plants as soon as the plants begin to form. You will get the best plants from the first formed buds on the runner. The earlier you can develop the plants and the earlier you can transplant them to the field, the better results you will obtain. The fruit buds are formed in late summer and fall and the earlier these are formed the stronger and more productive they will be, granting, of course, that cultural conditions in general are favorable.

You should transplant the plants by September first or earlier. The hot, dry weather of midsummer is now broken, and it is becoming cooler and more rain is beginning to fall. The plants should be set as soon as they have developed a strong root system. Irrigation immediately after transplanting is of great help.

I would suggest that you set the plants of a variety like Gandy 18 inches to two feet apart in rows three and one-half to four feet apart. Train the plants to single hills this fall for next spring's crop, as any runner plants which might develop this fall would produce weak fruit buds and tend to devitalize the main plant. After a crop is produced next spring, you can very nicely allow the runners to develop and change the plantation to the matted row system if you prefer this method.

Claims Not Justified

Editor, AMERICAN FRUIT GROWER MAGAZINE: The agents of a certain nursery firm have been selling trees to farmers in this vicinity, and I think that their claims are unjustified. I should appreciate it if you would give me your opinion in the matter.

They claim that they take their peach buds from the same trees that they secure the seeds from to grow the seedlings. Trees propagated in this way, they claim, never winter kill and never get the yellows. They claim that this method does not inbreed the tree and that when fall comes the sap flows back to the roots uninterrupted, thus protecting the tree from winter killing, as above mentioned. On the strength of these claims, they are getting quite a few orders. I find, however, that their order sheets do not state anything about these claims.

They also sell their trees for 75 cents each, and they agree in a contract to trim the trees for three years, for which they are to receive half of the third year's crop. Your opinion will be greatly appreciated. —M. A. G., Ohio.

ANSWER: As I understand you, this company claims it uses peach buds from a selected tree and works these on seedlings grown from seeds obtained from the same tree. They claim that trees so propagated never winter kill, never get the yellows and have other advantages. They sell the trees at 75 cents each and also obtain half of the third year's crop, agreeing to trim the trees for three years.

I can see no advantage in propagating peaches by this method. When such a method is used, the top and root of the tree will, of course, be more closely related than would be the case under ordinary methods of propagation; but I cannot see that there would be any advantage in this, except that the top and root might tend to grow more nearly at equal rates and that there might therefore be a somewhat freer flow of plant food and moisture than would be the case when the root and top grow at unequal rates. There is little difficulty along this line in peach propagation, however.

As to such trees being immune from winter killing and yellows, I do not see how the method of propagation would have anything to do with these matters. Peach trees winter kill and take the yellows because of certain inherent qualities characteristic of the species, and I do not believe any special methods of propagation would have any effect whatever in reducing the susceptibility to winter killing or diseases.

You do not state the age of the

trees. It seems to me 75 cents a tree is rather high even for two-year-old trees, that is, when they are bought in any quantity. As to receiving half the crop of the third year for trimming the trees the first three years, the contract should specify rather definitely and clearly just what is to be done in this connection. At the present time, it is considered good policy to trim peaches very little, and for this reason the company might get a large return for very little work if the third year's crop proved to be a good one. It seems to me that it is far better for growers to purchase the trees outright and then give the trees such care as they need. It seems to me that this is the only method that will insure giving the trees proper attention.

Treatment for Peach Borers

Editor, AMERICAN FRUIT GROWER MAGAZINE: I have several hundred two-year-old peach trees which are growing fine, but a number of them are infested with borers. I note that you recommend paradichlorobenzene. What amount would you advise for trees of this age. They have made a good, strong growth.—J. W. F., Ohio.

ANSWER: The best way to control peach borers is by means of paradichlorobenzene. In some sections of the country the material appears to injure trees three years old or under. However, in other sections little, if any, injury appears to follow its use on young trees, especially if the mounds of earth are torn down after about three weeks.

In the event that paradichlorobenzene is used on trees three years old or under, one-half ounce should be used for each tree. For trees four to five years old or younger, use three-fourths ounce per tree. For trees six years old and older, use one ounce, and for large, old trees, use one and one-fourth ounces.

In preparing the trees for treatment, first remove all grass and weeds from about the tree trunks with a spade or hoe. Also remove loose bark and gum from the trunks of the trees. Pulverize the material and apply it in a narrow ring about one inch wide and about one to two inches from the base of the tree. Do not place the material in contact with the tree. Carefully cover the material with pulverized soil until a mound six to eight inches high around the tree is formed. Compact the soil thoroughly with the back of the hoe or spade.

For trees three years old or younger, tear down the mounds in three weeks. For trees four to six years old, the mounds should be torn down about four weeks after application. In the case of older trees, the mounds should be removed in about six weeks after application.

Southern Nurserymen's Convention

THE SOUTHERN Nurserymen's Association will hold its annual meeting at the Henry Grady Hotel, Atlanta, Ga., September 8 and 9. Some of the more interesting features of the program will be as follows:

President's Address—Lee McClain, Knoxville, Tenn.

Some Horticultural Observations Made in Western Canada—L. A. Niven, horticultural editor, *Progressive Farmer*.

Profitable Berry Culture—W. N. Scarff, New Carlisle, Ohio.

Horticultural Conditions and Prospects in the Southern States—E. J. Hoddy, L. & N. Railroad.

Experiences in Propagation with Seeds and Cuttings—Prof. P. W. Zimmerman, Boyce Thompson Institute, Yonkers, N. Y.

Special address by radio—Earl E. May, president American Association of Nurserymen, Shenandoah, Iowa.

A Uniform Grading of Evergreens—E. T. Boerner, Jackson and Parkins Company, Newark, N. Y.

Problems of the Nursery Industry with reference to Rootstocks and Bud Selection—C. E. Durst, managing editor AMERICAN FRUIT GROWER MAGAZINE.

Quantity Discounts and Planting Charges—William H. Howard, Hickory, N. C.

Propagating Evergreens and Other Stock from Seed—Otto Katzenstein, Atlanta, Ga.

On the afternoon of September 8 the members will be guests of the *Ruralist Press* of Atlanta. The afternoon will be spent in swimming, boating, golfing, tennis and other sports at the East Lake Country Club. Dinner will be served on the Club Terrace. A question box will be conducted during the convention and round table discussions will take place on important subjects. On the afternoon of September 9, a trip may be taken to Stone Mountain, nearby nurseries or matinee, according to the desires of those present.

More detailed information and a copy of the program may be obtained from Secretary W. C. Daniels, Pomona, N. C.

... a newly refined Advanced Six Series and Light Six Series

Now on display at your NASH *dealer's*

Missouri Fruit Growers' Meeting Great Success

By T. J. Talbert
University of Missouri

THE HORTICULTURAL Field Day held by the Missouri College of Agriculture at Columbia on July 23 was attended by nearly 500 fruit growers representing every fruit producing section of the state. The apple, grape and strawberry growers were particularly well represented. A considerable number of persons from related industries were also present.

In the afternoon, by actual count, 105 automobiles drove through the gate onto the experimental grounds of the fruit farm located six miles south of Columbia. Under the direction of the horticulturists of the Agricultural Experiment Station, a tour of the fruit plantations was made. Lectures regarding various methods and practices were given by the college staff. Discussions relating to numerous horticultural practices, such as spraying, thinning, pruning, fertilizing, cultivating, propagation and varieties were featured.

With the lectures and demonstrations concluded on the University Fruit Farm at about 4:30 p. m., all the visitors were invited to make a tour of the River View Orchards, near McBain, which are owned and operated by Dr. J. C. Jones and Patterson Bain, Jr. About 200 apple growers made the tour and inspected the orchards, which overlook the Missouri River. When this was finished, the owners of the orchards served the visitors with a picnic supper. Sandwiches, salad, coffee, apple pie and ice cream never tasted better, and all departed with this expression—A great day for horticulture.

Atkins No. 11 Tapered Pruning Saw. Blade is adjustable to any angle. Handle is Easy Grip pattern.

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BUY an ATKINS Pruning Saw and you'll save time, work and money every day you use it. It will cut faster, cleaner and easier than any other saw you could buy.

The secret is the "Silver Steel" blade—the finest steel ever used in saws. Takes a remarkably keen edge and stays sharp a long time.

ATKINS Pruning Saws are made in 16 patterns to meet every pruning need. Ask your dealer for the saws you require. The name "ATKINS" is your guarantee of best materials, workmanship and finish—a saw of greater value and real satisfaction.

For every wood or metal cutting job there is an ATKINS Saw to save you time, labor and money.

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Here is a reliable guide to success in pruning. Shows the complete line of ATKINS Pruning Saws. A valuable book for every fruit grower or farmer. It's free—write for a copy NOW.

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ATKINS
SILVER STEEL SAWS

Peaches and the Peach Industry

(*Continued from page* 10)

many of the roots must develop; it is the reservoir for a reserve moisture supply and to some extent for plant food. While the soil conditions of the site have to do with the growth of the trees, its condition with respect to air drainage has much to do with the regularity of the crops.

This relationship, in the last analysis, is a matter of temperature. In the main, it has to do with frosts. There have been many demonstrations of the fact that an orchard located on a site well elevated above the general level of the surrounding section is uninjured by frost when those not so situated suffer serious frost injury. This is due to the simple fact that cold air is heavier than warm and settles or "drains" to the lower levels. Thus, two quite different climates may occur at two points separated only by a short distance. A slope may furnish all the air drainage that is necessary, provided it is not one side of a valley from which the cold air does not escape. An enclosed valley may fill up with cold air the same as it might fill with water, if there was no outlet for it.

Figure 2.—A thousand-acre peach orchard in the Appalachian Mountains. Different slopes and aspects are represented, but they are not sufficiently pronounced to noticeably affect the time of blossoming or the time of ripening of the fruit. (Courtesy Bureau of Plant Industry, U. S. D. A.)

Direction of Slope

The aspect of the slope, that is, the point of the compass towards which it inclines, is of much less importance than is commonly supposed. It is the temperature that surrounds the treetops that determines, mostly, the time of blossoming and the occurrence of the other seasonal epochs of the trees. If the slopes are not so steep, or so high, as to prevent a thorough mixing of the air about the treetops by the breezes that blow, the conditions will differ but little with regard to different slopes (Figure 2).

On the other hand, as between a steep slope on the south side of a mountain ridge that is high enough to constitute a distinct wind barrier, and the corresponding slope on the north side, there may be very marked differences in temperature. Under such conditions the trees would advance into growth earlier and more rapidly on the warmer, more protected southern aspect.

There is yet another feature with temperature as the chief expression. The extreme cold of very high elevations suggests the point in question. The treeless zones on high mountains result, in part at least, from low temperatures and short growing seasons. Thus, it may be too cold for peaches if the site is too low; an elevation may also be so high that the temperature is inadequate for their culture. These two temperature factors, however, result from very different sets of conditions.

Some of the peach orchards located in past years on high ridges of the Allegheny Mountains have manifested the effects of high altitudes. The lower sides of a certain orchard so located were some hundreds of feet above the floor of the valley, the upper side extending to the summit of the ridge. Trees of the same variety on the lower side of this orchard habitually blossomed a few days in advance of those on the upper side, the fruit responding in a similar manner in time of ripening. Probably the cold winds from the north, blowing over the summit of this high ridge, lowered the temperature somewhat on the upper side of this orchard. Other factors operative at high elevations may also have influenced the temperature. The point involved is that at a certain elevation as well as at relatively low altitudes, the temperature may be adverse to peach growing (Figure 3).

The question of shelter belts to protect orchards from the cold desiccating winds of winter, the influence of large bodies of water and the relation of latitude to peach growing, are all temperature factors in the last analysis. Some of them are rather complicated in their expression but potent of good or ill, as the case may be in their relation to peach production.

Figure 3.—A peach orchard on a pronounced slope in the Allegheny Mountains. In some seasons, the trees blossom and the fruit ripens two to three days earlier on the lower than on the upper side of the orchard. (Courtesy Bureau of Plant Industry, U. S. D. A.)

Winter Injury

Winter injury to fruit buds or trees manifests itself in many ways and in many different degrees. Hardiness in the northern peach districts is quite a different factor, at least, it is expressed very differently from hardiness in the southern districts. In the former it is associated, as a rule, with low temperatures—with cold so extreme that it directly injures the tissues of the tree or the buds. Complete dormancy of the tree as cold weather approaches is an essential condition from the standpoint of cold resistance under these conditions.

In the southern districts, winter injury is usually associated with warm rather than cold periods. So long as the trees and buds remain dormant, there is little or no danger. Peach trees in the southern districts will withstand, when dormant, all normal winter minimum temperatures. But often warm spells occur which are of sufficient duration to cause the buds to start and the trees to resume some activity. In this condition, they are much more susceptible to injury than when completely dormant, so that the occurrence of even normal temperatures then may result in serious injury to the somewhat tender buds and other parts.

It is a curious fact of nature that deciduous trees which require a period of rest, when once they become dormant in the fall, will so remain for a time, even if weather and other conditions are favorable for growth. This characteristic has intimate relationship with winter injury in the South. Apparently the required rest period is a more or less definite space of time, though it may vary with different kinds of trees. In the case of peach trees, if they become dormant early in the fall, the rest period is completed by the time the warm periods, which commonly come in early or midwinter, occur. Then a warm spell of some days' duration is experienced; the trees become active, the buds swell, and with the next drop in temperature, even if only to a seasonable degree, serious injury may result.

Rest Period Has Relation to Frost Injury

On the other hand, if the trees remain in an active state of growth until late in fall the natural period of rest may not be completed and the trees will not then be in a condition to respond to higher temperatures until after the warm spells of early and midwinter have occurred. If they remain dormant until well towards spring, the chances of passing through the vicissitudes of weather are enhanced as compared with those that exist when the rest period is completed early in the winter season.

The hazard of warm periods during the winter is practically non-existent for the northern peach grower. However, in order that his trees may withstand the low winter temperatures without injury, it is highly important that they approach the winter season in a thoroughly dormant condition. His cultural and other practices should be such as to induce that condition. The southern grower, on the other hand, has no hazard in normally low winter temperatures, provided his trees are dormant. Since they are more likely to be thoroughly dormant throughout the winter if they continue in an active condition up to the approach of winter, the southern grower may consistently shape his cultural methods with a view toward gaining that end.

Another temperature factor often proves puzzling until it is understood. For example, a critically low temperature is recorded and peach trees pass through it without injury. Later, another temperature drop may occur, not as low as before, but it proves seriously disastrous to peach buds or even to the trees. This difference in results may be due to the length of the period of duration of the critical temperature. A dangerously low degree may be recorded but may continue only for a brief time; a critical but less severe drop may occur and continue for a considerable period, resulting in much bud or tree injury. In other words, a seriously low temperature, long continued, is likely to prove more harmful to plant tissues than is such an occurrence which continues only for a brief space of time. Moreover, in many cases, the rate of decrease in the actual temperature of a tree probably lags behind that of the air. Hence the air may be colder than the tree itself, especially in the case of a rather sudden drop in the air temperature.

Air Temperature During Blossoming Time

The air temperature during the blossoming period is a vital factor, even though no freezing occurs. If it is so cold that the pollen does not germinate or that the pollen tube fails to develop and function normally, the fruit will set very imperfectly; or what appears at first to be a good set may be so "hard hit" by the "June drop" and may continue to drop so persistently that by the time the fruit is ripe there will be hardly any to pick. Poor fertilization of the blossoms due to cold weather is obviously the cause of this phenomenon.

There are other curious responses. If the weather conditions during the blossoming period are favorable for a time and blossoming is progressing rapidly, and then a cold spell comes, though not necessarily freezing temperatures, it takes about one day to slow down perceptibly the rate of opening of the blossoms. Working in the opposite direction, the first bright, warm, sunny day following such a slowing down of the movements of the trees witnesses but very little progress in the opening of the buds. It takes about one day of bright, warm sunshine to start the buds into motion again.

The growth and development of the fruit during the season is an expression of extremely complex influences and factors. Why the same variety varies from season to season in the time of blossoming, in the time of ripening and in other ways, is difficult, perhaps impossible, to analyze. We speak of it as due to the conditions—the environment. But that is little more than "begging the question."

Latitude Makes Little or No Difference in Length of Season

It has sometimes been thought that a variety of peach growing in the South would reach maturity in a shorter time after the blossoming period than would the same variety grown in a northern section. It is, of course, an exceedingly difficult field in which to make comparisons. The season in the South may be more or less rainy, or cloudy or windy as compared with conditions in the North, and these factors may influence the rate of growth and development as well as the temperature factor, which is the one that perhaps suggests itself more readily as the controlling difference. However, limited evidence, more or less conflicting in itself, rather indicates that about the same number of days are required for a variety of peach to ripen in the South as in the North. The exact number of days, however, between blossoming and the ripening of the fruit may vary considerably from season to season in the same section. Similar evidence suggests that there possibly may be greater tendency towards lengthening of the period between blossoming and maturity of peach varieties from east to west than there is from south to north. The observations on this point, however, are too fragmentary at this time to justify the drawing of any definite conclusion.

New Horticulture Building at Purdue

A NEW Horticultural Building is under construction at Purdue University. Plans are being laid for the dedication of this building on November 11. The various horticultural organizations of Indiana will co-operate in the program that will be carried out in this connection. Among these are the Indiana Horticultural Society, the Indiana State Florists' Association, the Indiana State Vegetable Association, the Indiana Canners' Association and the Purdue Horticultural Show. Each organization plans to hold its annual meeting at the time of dedication of the building.

An Indiana horticultural products exposition is planned for November 10, 11 and 12 in connection with the dedication and the meetings of the various organizations. All of the important horticultural products of Indiana will play a conspicuous part in this exposition.

Daughter—Oh, dad, what is your birthstone?

Father of Seven—My dear, I'm not sure, but I think it's a grindstone.

A New Development
in farm electric light and power

NOW there is a fully automatic Delco-Light plant that operates without cranking — without large storage batteries—and practically without attention.

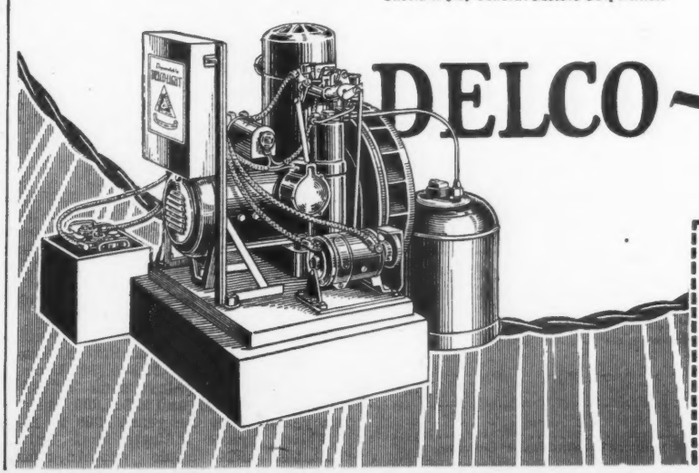
Any hour of the day or night the new Delco-Light is ready—ready to respond instantly to any switch within reach of your hand.

All you do is press a button and you have electric light—*brilliant* light—light to show the way about the house, barn and outbuildings—light to work by—light to read by—light wherever and whenever you want it.

And the same plant that supplies you with light will also supply you with power—power for operating pumps, grinders, washers, separators and other small power machinery—power that brings hours of freedom from many tiresome tasks.

Learn how easily you can now have Delco-Light. Get the new low prices. Get the convenient General Motors monthly payment plan. Write today for complete information.

DELCO-LIGHT COMPANY, Dept. E-43, DAYTON, OHIO
Subsidiary of General Motors Corporation



DELCO-LIGHT

DELCO-LIGHT COMPANY,
Dept. E-43, Dayton, Ohio

Please send me complete information about the new Automatic Delco-Light.

Name.....

Address.....

City..... *State*.....

County.....

Are You sharing your crops with BORERS?

PEACH and prune growers are advised by fruit specialists to guard against tree borers. Protect your crops and your trees by applying *Niagara* PARA (pure Para Dichloro Benzene) regularly each season to prevent their appearance. The use of this safe chemical gives you 100% control of borers.

The U. S. Dept. of Agriculture and State Experiment stations recommend Para Dichloro Benzene as being thoroughly effective and safe. In *Niagara* PARA you secure a pure, strong, unadulterated form of this effective remedy for insect pests. *Niagara* PARA is also effective for Woolly Apple Aphis and Grape Phylloxera.

Insist on *Niagara* PARA*—your guarantee of satisfaction.

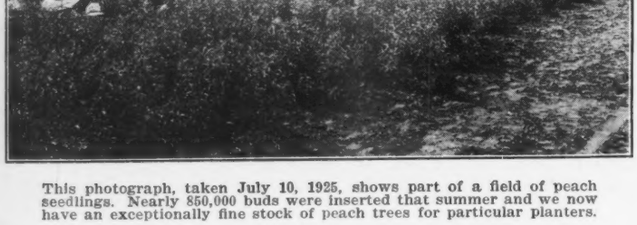
Write today for *Free* PARA folder and we will also send you a copy of the latest Government bulletin on the control of borers. Please give dealer's name.

Niagara PARA PARA DICHLORO BENZENE

NIAGARA ALKALI COMPANY
9 East 41st Street, New York City

Braun-Knecht-Heimann-Co., San Francisco, California
Selling Agents for California, Washington, Oregon

*Unless this Chemical is absolutely unadulterated it is ineffective. The Niagara Para label insures the highest purity.



This photograph, taken July 10, 1925, shows part of a field of peach seedlings. Nearly 850,000 buds were inserted that summer and we now have an exceptionally fine stock of peach trees for particular planters.

To Lovers of Fruit and Flowers

Of Our Catalogue Our Customers Say:

"Exploring its pages one can almost taste the fruit and smell the flowers."

"It contains a large amount of valuable information in a small compass."

"Your catalogue appeals to me because it is free from exaggerations."

"Practically all the fruits and shrubs we have purchased in the past seven years have been bought of you. Since our first planting our satisfaction has been growing."

"You chose the right slogan."

IF you would enjoy home-grown fruit—
If you would grow fruit for profit—
If you wish to beautify your place and make it more valuable—
Send for the Neosho Catalogue.

We want you to be sure to get your copy of this new 52-page Catalogue with 120 illustrations. Fill out and mail the attached coupon and we will promptly send you the book free.

"Yours for Growing Satisfaction"

NEOSHO NURSERIES
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MAIL THIS COUPON FOR THE NEOSHO CATALOGUE FREE

NEOSHO NURSERIES CO.,
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Gentlemen:—Please send me free the new Neosho catalog.

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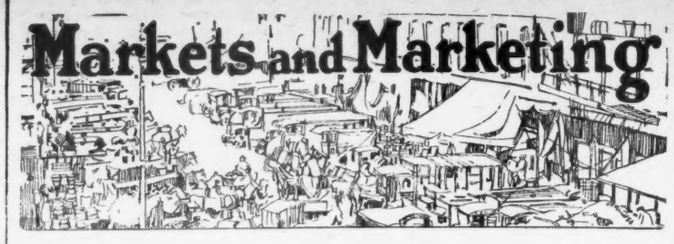
☐ Check here if you wish Landscape Service.

Markets and Marketing



THE SUMMER temperature exerts an important influence upon lemon sales, according to studies recently completed by the California Fruit Growers' Exchange. The volume of sales during May, June, July and August constitute 52.2 per cent of the total year's sales.

During 1926 a small peak occurred during the week ending April 8. This peak was due to a hot lemonade demand created by the epidemic of colds and influenza which occurred throughout the eastern states at that time.

The average 10-year weekly sales to wholesalers and jobbers shows a marked increase in demand beginning in May and reaching the maximum the last of June. The months of July and August show a decided decrease, which continues until the first of October, when the cold weather level is reached.

When a comparison is made between temperatures and sales, it is found that the sales are made a little while in advance of the arrival of the higher temperatures. In other words, the trade anticipates the hot weather and buys in advance. A speculative demand begins during the last half of May, as indicated by a decided increase in sales at that time, but this speculative demand disappears in a short time.

THROUGH co-operation between growers and railroads serving southern New Jersey, summer fast freight schedules for fruits and vegetables have been worked out to the advantage of all concerned, according to Harry B. Bamford, transportation specialist of the New Jersey Department of Agriculture. As a result of joint conferences held earlier in the season, the railroad officials were enabled to learn at first hand of the needs of growers in the way of best hour for departure of certain trains, the number of refrigerator and other cars needed and other information of value. As a result of this information, changes in schedules have been made, and better service and better satisfaction are the result.

TOTAL world exports of apples from 1909 to 1913 averaged around 21,000,000 bushels a year, dropped to around 13,000,000 bushels in 1921, reached a maximum of around 32,000,000 bushels in 1924, and declined to around 24,000,000 bushels in 1925. The United Kingdom increased its imports from around 9,300,000 bushels in 1921 to some 17,000,000 bushels in 1924, while Germany, whose imports from 1921 to 1923 were negligible, came into the market in 1924 for about 11,300,000 bushels.

Expansion in total exports of apples becomes particularly significant to American exporters when we consider that in 1924 the United States exported approximately 12,300,000 bushels of apples as against some 5,800,000 bushels in 1921 and 4,300,000 bushels a year during the years 1909 to 1913. These figures indicate that United States 1924 apple exports more than doubled those of 1921 and nearly tripled the average yearly exports of 1909 to 1913. On the other hand, Canada, whose average yearly apple exports during 1909 to 1913 of around 3,700,000 bushels of apples were but 500,000 bushels a year less than those of the United States, exported 4,000,000 bushels in 1921 and 5,000,000 bushels in 1924—an increase of 25 per cent. Australia, with average yearly exports during 1909 to 1913 of 1,000,000 bushels and 872,000 bushels in 1921, is now exporting around 2,000,000 bushels of apples a year. None of the other apple-exporting countries appears to have increased foreign shipments to any great extent.—*D. J. Moriarty in Commerce Reports.*

CANADIAN exports of fresh fruit for the 11 months ended February 28, 1926, were valued at $5,957,913, while imports of fresh fruit had a valuation of $18,165,016. Apples and berries were Canada's only fresh fruit exports of any importance, while oranges, bananas, lemons, pears, grapes and grapefruit were the leading imports.

The following statement shows the value of Canadian exports and imports of fresh fruit for the 11-month period, April, 1925, to February, 1926, inclusive. Canadian trade statistics are compiled on the basis of a fiscal year ending March 31; statistics for March, 1926, were not available at time of preparation of this article. The item, "Other fresh fruit," under "Imports for consumption," includes: wild berries ($10,161); guavas, mangoes, plantains and pomegranates ($9607); blackberries, gooseberries and raspberries ($6227); limes ($1115); others ($63,812).

Exports:	
Apples	$ 5,353,716
Berries	495,264
Other fresh fruit	108,933
Total	$ 5,957,913
Imports for consumption:	
Oranges	$ 6,494,161
Bananas	4,013,865
Lemons	1,263,630
Pears	925,551
Grapes	822,894
Grapefruit	782,284
Apples	685,567
Peaches	642,844
Strawberries	598,811
Pineapples	512,464
Plums	494,753
Melons	412,300
Cranberries	204,510
Apricots, quinces and nectarines	139,289
Cherries	81,071
Other fresh fruit	90,922
Total	$18,165,016

The following table prepared from reports of the Dominion Bureau of Statistics shows estimated production of fresh fruit in Canada, by provinces, in 1925, also total fruit production for all Canada.
—*D. J. Moriarty in Commerce Rports.*

CANADIAN FRUIT YIELD, 1925

Fruits.	Ontario	Nova Scotia	British Columbia	Quebec	New Brunswick	Total production
Apples, barrels	1,587,848	956,056	858,570	109,004	69,292	3,580,770
Pears, bushels	71,400	18,000	24,182	.....	.....	113,582
Strawberries, quarts	3,800,000	195,000	2,900,000	585,000	590,000	8,070,000
Raspberries, quarts	1,000,000	30,000	900,000	.....	17,000	1,947,000
Other berries, quarts.	900,000	100,000	1,450,000	.....	20,000	2,470,000
Plums and prunes, bushels	39,888	.....	39,674	.....	.....	79,562
Peaches, bushels	199,716	.....	2,124	.....	.....	201,840
Cherries, bushels	81,675	.....	33,250	.....	.....	114,925
Grapes, pounds	25,000,000	.....	.....	.....	.....	25,000,000

AT THE recent meeting of the American Institute of Co-operation, a majority of those present voted endorsement of the plan of the federal Bureau of Agricultural Economics for the establishment of a national code of ethics in the produce trade and the

settlement of trade disputes through arbitration and the voluntary registration of produce organizations, both co-operative and private. These fundamentals were included in the plan which was proposed by the department and which has met with some serious opposition on the part of members of the produce trade. It was the consensus of opinion of those present at the school that the plan should be given a fair trial to indicate whether revisions in the plan should be made. Many of those present believed that the new plan would eliminate many unscrupulous produce organizations and would assist materially in maintaining a desirable standard of conduct in the produce trade.

ACCORDING to the United States Department of Agriculture, the average person in the United States consumes about three apples a week.

Estimates for the British Isles show that the average person there consumes only about two apples a week. In most countries of continental Europe, the consumption of apples is comparatively light. There seems, therefore, an excellent opportunity for bringing about a larger consumption of our leading fruit in foreign countries through modern methods of advertising and merchandising.

E. R. FRENCH of the Food Marketing Research Council announces that an experimental study of consumer demand for apples is being conducted in New York. The purpose of the study is to secure information showing buying habits of consumers and preferences for different varieties and brands of apples. Questionnaires are being sent out through certain schools. The purposes of the investigation are being carefully explained to students and the importance and practical value of the undertaking are being impressed upon them. They are then being asked to take the questionnaires home and to secure the help of their parents in filling them out accurately.

"DIRECT to Consumer Marketing of Farm Products" is the title of Circular 143, recently issued by the Missouri Experiment Station, Columbia, Mo. F. L. Thomsen, the author, believes that direct to consumer marketing of some farm products is both practicable and profitable. He describes some direct methods which may be used and makes suggestions for the guidance of producers.

ROADSIDE marketers in New Jersey, who conducted their markets last year according to New Jersey Farmers' Roadside Market Rules, have formed an organization of their own. By-laws, rules and regulations have been adopted. The Massachusetts sign, an ear of corn, will be used as a trade-mark. Extensive advertising is contemplated in connection with the 1926 program.

Monthly Market Review

THE FOLLOWING summary of the fruit marketing situation was furnished by the United States Bureau of Agricultural Economics on August 7:

"The spring and summer of 1926 will class as a season of contrasting prices. Produce sold high in the early months but ranged low most of the time in July and August. Delayed shipping seasons and heavy midsummer production explain the situation.

"Prices dropped fast in July, but a few lines came back a little in early August, although weekly carlot movement was still 20 per cent greater than a year ago. Much of the increase was in potatoes, melons, peaches and apples which, accordingly, sold cheap. At the present rate of carlot shipments, the total movement of fruits and vegetables will exceed last season's million carloads, besides probably twice as much more used and disposed of in various ways. The year around average is about 20,000 cars per week, and this quantity in summer may be disposed of without trouble, but heavier movements, like that of 25,000 cars a week lately, overtax the market and bring low prices.

Apples Start Low

"Owing to heavy market supplies in nearly all sections, early apple prices have averaged about 25 cents per bushel lower than early prices of last season. Opening local quotations for advance sales of winter varieties in Virginia ranged $3.50-$4.50 per barrel, according to variety, which is not far below the level of last season. No quotations have been received on Northwest boxed apples. Early eastern fruit has been selling in city markets at 50 cents to $1.75 per bushel basket. California Gravensteins brought $2 or more per box.

"The export situation is unsettled. Early reports of fair sized apple crops were followed by reports of light crops in England and most parts of continental Europe. Apparently the market supply will be moderate, but the low prices quoted in England for Australian apples are not encouraging, the range at times having been only $1-$1.50 per box. British markets have scarcely recovered from the depressing effect of the trouble experienced with spray residue last season; and still more serious is the continued unemployment resulting, directly and indirectly, from the long strike of the coal miners.

"As the situation looks now, there would be room for apples but some doubt about the paying quality of the foreign market.

Peaches in Heavy Supply

"Southern peaches have been one of the leading features of the produce market all summer. Quality of the later shipments was excellent and demand was satisfactory, but prices have averaged lower than usual because of the continuously heavy supply. Shippers have made considerable effort to secure wide distribution of the peach shipments this year, also to increase the use of peaches in manufacture of by-products. Sales in local markets were encouraged. The season's output from Georgia has approached 15,000 cars, the heaviest movement on record. The Elberta, the principal variety, has been selling in northern markets at $1.50-$2 per bushel, compared with $2.50-$2.75 a year ago, and $1.75-$2.50 in August, 1924.

"Southern peaches are nearly taken up, but the supply will become heavy again in September with the activity of the Middle Atlantic and Middle Western states, the Rocky Mountain region and California; and another heavy supply is due still later with the liberal crop promised in western New York and other late shipping sections.

Grapes

"Grape production in the Ozark region shows heavy increases this year. Shipments of probably 1000 carloads, mostly Concords, are expected from around Springdale, Ark. California's big crop is coming to market at a more liberal rate than last year and a price of $1.50 per four-basket crate in eastern markets is rather low."

Announcing ~ a *new* FAIRBANKS-MORSE Home Electric Power Plant!

—the crowning achievement

A Few of Its Many Features:

1. ***Self-contained.*** Compact. Completely enclosed yet easily accessible. No separate tanks. Absolutely safe—no moving parts exposed except belt pulley.
2. ***Double-duty Unit.*** Both electricity and engine power from *one* plant at *one* cost.
3. ***Easy to Operate.*** With storage battery equipt plant, merely press lever to start.
4. ***Selective Electric Control.*** Lights operated direct from generator, from storage battery—or from both combined, or entire engine power may be made available for other work—simply by turning a switch knob from one position to another.
5. ***Advanced Design.*** Quiet—smooth running. Constant speed regardless of load. Rotating parts balanced. Has Ricardo cylinder head; unique cooling system of our own design; pressure lubrication; and other refinements.
6. ***Economical.*** Operates on either kerosene or gasoline. No odor, smoke or knocking—proof that fuel is completely utilized.
7. ***Approved by Underwriters' Laboratories.***
8. ***Automatic Voltage Control.***
9. ***Completely Equipt.*** Governor, power pulley, tools, muffler, exhaust fittings—regular equipment at no extra charge.

The New Home Electric Power Plant is built in two sizes, 750 and 1500 Watts, both delivering 32 volts for operation without storage battery or in the regular manner with storage battery.

If you prefer to, you can purchase this plant on a budget-savings basis under the new Fairbanks-Morse finance plan.

A GLANCE at the illustration above will convince you that Fairbanks-Morse has built a plant that is *years* ahead. But to realize the full significance of this announcement you will take advantage of the first opportunity to see this plant in reality—at your dealer's.

This Home Electric Power Plant is a *new* product only in the sense that it is now for the first time ready for general distribution. *Actually,* it is the perfected result of long development followed by tests in many homes like yours.

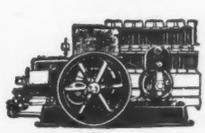
This is a real *home* plant—safe, simple, dependable, economical to buy and easy to operate. Its smooth-running, perfectly balanced engine with its countless refinements assure extra years of dependable service—its advanced features like the new power-increasing Ricardo cylinder head and unique type of cooling system mean greater economy.

The selective electric control is a masterpiece of fine craftsmanship, and at the same time is so simple that anyone can operate it. After you have discovered these and many other evidences of advanced construction you will be surprised to find that this modern plant costs so little. This will be your final reason for choosing a Fairbanks-Morse.

FAIRBANKS, MORSE & CO., *Manufacturers,* Chicago, U.S.A.

Branches and Service Stations Covering Every State in the Union

Fairbanks-Morse Products (F M) "Every Line a Leader"



Illustrated above is the Fairbanks-Morse belt-driven Home Electric Light and Power Plant, thousands of which have been in use for many years. Because of its popularity and the satisfaction rendered by this plant, we shall continue its manufacture

INTERESTING INFORMATION

FAIRBANKS, MORSE & CO., *Dept. 9381 Chicago, Ill.*
Without obligation send literature covering the new Fairbanks-Morse Home Electric Power Plant.

Name.....

R. F. D. or Street.....

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Also send literature on:

☐ "Z" Engines
☐ Feed Grinders
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☐ Steel Eclipse Windmills
☐ Home Light and Power Plants
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Fortify for Fire Fighting

IMPROVED Pyrene EXTINGUISHER

SETTLE a fire while it is young and it will never burn up to torment you with what might have been.

Have an Improved PYRENE—or several of them—located conveniently about the farm buildings. Be prepared to settle a fire before it grows beyond control.

Women and children can operate the Improved PYRENE. It works so easily.

It is fool proof. You cannot jam it. You cannot make it cause trouble for anything except fire. Will not freeze at 50° below zero.

Improved PYRENE gives complete satisfaction and quick action in every fire emergency.

Pyrene Manufacturing Co.
Newark, N. J.

Pyrene KILLS FIRE SAVES LIFE

Write for free booklet, "Safeguarding the Farm against Fire."

Ask your Doctor

Your doctor will tell you that the most healthful water comes direct from the well. Water in a storage tank quickly becomes stale and foul and often highly dangerous to health.

Let us tell you how the Milwaukee Air Power Water System safeguards health by delivering water direct to you from well or spring or both of them; how it enables you to have hot water and water for sanitary uses at the turn of the faucet. Manufactured for 15 years. Over 25,000 in use. It will obligate you in no way to get our booklet. Write for it today.

Milwaukee Air Power Pump Co.
25 Keefe Avenue Milwaukee, Wis.

Also builders of the Combustion Fuel Oil Burner.

With the Co-Ops.

IN THE closing hours of the last Congress a bill was passed which provides for the establishment of a department of co-operative marketing in the Department of Agriculture. Chris L. Christensen, who has been in charge of the co-operative marketing work in the Bureau of Agricultural Economics, has been appointed as head of the new division. The work and personnel of the former division will be transferred to the new department.

Under the new department, the research, educational and service work relating to co-operative marketing will be enlarged. Studies will be made of the co-operative movement in the United States and foreign countries. Business technique and marketing methods developed by co-operative organizations will be analyzed and studied. Commodity marketing specialists familiar with the needs of co-operative associations and with the research and service of the department will be employed. These experts will form a special contact between the 12,000 existing co-operatives and the department. In general, the department will assist the established co-operatives in every way possible, and it will also give advice and assistance to new organizations.

The law enables the department to co-operate with educational institutions. It will be part of the plan, therefore, to assist colleges and co-operative associations in working out a comprehensive program relating to co-operative marketing.

THE SECOND annual summer session of the American Institute of Co-operatives, which was held at the University of Minnesota June 21 to July 17, was pronounced a success by all who attended it. The enrollment was nearly double as compared with last year. During the four weeks 575 persons from 32 states and nine foreign countries took part in the sessions. The foreign countries represented included Denmark, England, South Africa, Germany, Australia, Russia, China, Czechoslovakia and Canada.

PARTS of the annual report of General Manager C. C. Commander of the Florida Citrus Exchange as are not confidential have been included in a sales portfolio entitled, "Efficient Citrus Marketing." This booklet has a brilliant orange cover, and the printing and illustrations are also of a striking nature.

Shipments by the exchange during 1925-26 totaled 3,659,204 boxes as compared with 5,536,437 boxes during 1924-25. The shipments included 1,818,694 boxes of oranges, 1,629,249 boxes of grapefruit, 202,081 boxes of tangerines and 9180 boxes of miscellaneous products. Notwithstanding the short crop, the exchange operated at a cost of 18 per cent less than during the previous year.

The exchange emphasizes the return of cash to growers in the shortest time possible consistent with sound business methods. Returns from private sales are received within 10 days after arrival of fruit, on the average. From auction sales, the return averages three days. Transfer of money from the Tampa office to the sub-exchange requires one day and from the sub-exchange to the local association another day. From here the money is distributed to the growers as soon as the pool is completed and the average struck. Most of the locals are advancing up to 75 per cent of the sales value of the fruit in cash previous to the closing of the pool. Packing operations are conducted at cost, and any profits arising from these operations are later refunded to growers.

During the coming season all Seald Sweet fruit is to be stamped with the brand name as a means of identification. Other plans include the keeping of all low grade fruit out of the box market. The exchange was able to sell its boxes of low grade fruit the past season at an average of over 50 cents a box. Large quantities of grapefruit were canned, and the number of canneries is increasing steadily. The demand for concentrated fruit juice is increasing. Two factories are now making this product, and others are being planned. Through these factories outlets for low grade fruits are found, and this helps to keep the box markets clear of undesirable fruit.

FRANK O. LOWDEN, former governor of Illinois, has recently returned from an extensive tour of Europe, in which he gave particular attention to the development of co-operative marketing there.

"I am more convinced than ever that organization is the greatest need of the farmers of this country," Mr. Lowden said during a recent address to a group of 500 Illinois bankers who took part in the banker-farmer field day meeting held at Mr. Lowden's Sinnissippi Farms, Oregon, Ill. Mr. Lowden pointed out that the farmers' interests were also the bankers' interests and that anything the bankers could do to help better the condition of agriculture would also help better their own condition and the condition of the country in general.

CHECKS totaling $753,051.62 were mailed to members by the California Prune and Apricot Growers' Association on July 15 as final payment on the 1925 prune deliveries. Thus, the management's intention, expressed last fall, to pay the growers for their deliveries during the season in which their crops were produced, has been carried out.

The prices paid to growers for Sunsweet prunes ranged from $298.13 per ton for the 20/30 size to $65.18 for the 90/100 size. Payments for the Equality brand ranged from $293.13 per ton for the 20/30 size to $65.18 per ton for the 90/100 size.

In addition to the payments enumerated, a special premium was paid on sizes 20 to 34, ranging from $60 per ton for the 20's to $2 per ton for the 34's.

President C. D. Cavallaro stated in a letter which accompanied the checks that all obligations to growers on the account of the 1925 crop had been liquidated. The association is in a splendid condition, both financially and otherwise, according to his letter. He further stated that this final payment is the earliest final payment made in the history of the association.

In addition to the cash payments, growers' accounts are also being credited with an additional equity in common stock of the Growers' Packing and Warehousing Association, amounting to 1.4 per cent, according to the net value of the deliveries made by each grower. At the end of the present contract period, the association will have retired all of its outside indebtedness, and the property will be entirely owned by the membership through equity in common stock and advance fund investment credits.

During the next few weeks the association expects to distribute $139,771.05 as retirement of the principal and $39.135.86 as interest on the class A revolving fund. When this payment has been made, growers will have received over one-half of the investment made by them in the "old" association, known as the California Prune and Apricot Growers, Inc.

THE CALIFORNIA Walnut Growers' Association is going to stamp the individual nuts of its Diamond brand with the trade-mark of the organization this year. The exchange decided on this move some time ago and offered $10,000 as a prize to the party who invented the best machine for the purpose. This method of handling the problem brought a lot of free advertising and publicity, which alone fully justified the expense, in the opinion of association leaders. Furthermore, the machine that has been adopted is probably better and has no doubt been obtained at lower cost than would have been the case had the exchange hired experts to develop the machine. The machine which will be used this fall is said to be capable of stamping fully 95 per cent of the nuts legibly by test.

As a result of stamping, the exchange expects to carry the brand and name of the exchange all the way to consumers. In this way the advertising and retail distribution will be thoroughly co-ordinated, and the greatest possible advantage will be taken of the advertising. Furthermore, consumers will be assured a dependable quality of nuts, and substitution of other walnuts for the Diamond brand will be prevented.

English Fruit Prospects

A RECENT report indicates that England will have a light crop of apples this year, only about half of the normal production being expected. Damage from frost and much dropping are responsible. Similar results have been obtained with cherries.

Black currants show promise of about half a crop, and red currants are reduced 20 per cent below the normal average. A heavy crop of good quality gooseberries is expected. A fair crop of pears is expected in Kent, a moderate crop in Worcester and Somerset and a generally poor crop in most other districts.

A good crop of plums is expected generally. Raspberry canes were damaged by frost but recovered fairly well and set a good crop of fruit. Strawberries produced only a fair crop, and the fruit was inclined to be small and late in ripening.

Nearly a Million Cars of Produce Shipped Last Year

SHIPMENTS of 38 fruits and vegetables in the United States last year filled 978.927 cars, or an increase of about 10,000 cars over 1924, according to the Department of Agriculture.

White potatoes lead with a total of 241,528 cars. The leading fruits from the standpoint of carlot shipments were as follows: apples, 118,036 cars; grapes, 81,865 cars; oranges, 57,035 cars; peaches, 40,829 cars; pears, 21,015 cars; grapefruit, 19,933 cars; strawberries, 12,246 cars; and lemons, 11,590 cars.

RECENT crop estimates placed the Canadian apple crop at 105 per cent of that of 1925, or 3,045,900 barrels. British Columbia promises to have the largest crop on record for that province, or about 3,525,500 boxes. It is estimated that Ontario will have 774,000 barrels; Quebec, 77,900 barrels; New Brunswick, 40,000 barrels; and Nova Scotia 978,726 barrels.

Operation of an Apple Packing House

(*Continued from page* 8)

is done in trays and can be inspected before placing in the barrel. This machine will allow us to use women help, which is much easier to secure than male labor.

Costs

In our packing house we keep fairly accurate cost figures. Last season our charge to the growers was 10 cents a bushel and 40 cents a barrel for packing. In addition to this we charged 12 cents per bushel crate for all culls sorted out of the packed fruit. A daily summary of packing earnings as against the packing house payroll is kept, and on page 8 we quote this record for a busy week in October.

It will be noted from the figures given that our gain for the week was about 28 per cent of our total revenue. There are other items of cost that must be added to the payroll, and in our bookkeeping system all such items as tools that quickly wear out, paper wrappers, nails, power, etc., are charged into a warehouse expense account. There is also a period at the beginning and end of each packing season when our operations are performed at a loss. Last season when all of these items were in, we had a net profit in our packing account of about 10 per cent. This money was used to depreciate packing machinery and buy new orchard crates.

Last season we paid our labor at the rate of 35 cents an hour for the men and 25 cents for the women who worked at the graders and 30 cents an hour when facing. During the busy part of our packing season, we worked 12 hours a day on Monday, Tuesday, Thursday and Friday and 10 hours on Wednesday and Saturday. We do not open our packing house on Sunday unless it is absolutely necessary. This ruling was made a few years ago, and we find that we get along better than when working seven days a week.

Some of the Michigan associations fix their packing charge on the basis of orchard crates delivered instead of on the finished package. Our idea is that a graduated packing charge is best. Place the average, or about the average, packing charge on the second grade, make the first grade a little lower and the culls a little higher. This would put the heaviest charge on the poorest lots of fruit that take the most time in sorting. It might also have its effect on the growers and make them strive a little harder to raise the best grades.

Rambles of a Horticulturist

(*Continued from page* 5)

Mr. Sleep grows alfalfa as a cover crop. Formerly many of the orchards of the vicinity were clean cultivated but never to the extent that this practice was followed in Oregon and Washington. The growers soon discovered that the trees were not growing properly, and cover crops are now being used almost universally. Alfalfa is considered one of the best crops. The alfalfa is left on the land as long as it will grow well. The crop is never mowed but is disked into the soil occasionally. No manure or chemical fertilizers are used by Mr. Sleep.

Mr. Sleep's experience in spraying is exceedingly interesting. When he first acquired the orchard, he attempted to handle it by hired management. However, the trees became badly infested with scale and the fruit sometimes showed 60 per cent of infestation. Later, he moved on the place himself and assumed active control. He paid his men a premium for careful spraying. Using lime-sulphur only, he reduced the infestation, until now practically no scale is present.

Spraying Methods

He has five portable spraying outfits and each one sprays about five acres a day. He uses a Friend gun on the ground, set so as to spread the spray pretty well. The man on the tower uses a rod and disk nozzle. Pressures ranging from 300 to 350 pounds are used. Codling moth is a serious pest, but scab is not a factor because of the dry climate. Mr. Sleep was making his fourth application on June 25 at the time of my visit, using one pound of hydrated lime and four pounds of powdered arsenate of lead to 200 gallons of water. The water is pumped into the tank from an irrigation ditch. He has invented an ingenuous arrangement in regard to the spray pump motors. The regular motors proved too weak for the pressures desired and they were removed. The pump was turned around. New Ford motors were substituted. The drive shaft was cut to the proper length and gears were fitted between it and the pump gears. Mr. Sleep states that if he had the job to do over again, he would use drive chains instead of gears. The Ford motors appear to handle the outfit easily even when working at 350 pounds' pressure.

Air Cooled Storage Plant

There is a well equipped packing house on the Sleep farm, and there is also an air storage plant capable of holding 60 cars of apples. This house is "T" shaped, as shown in the picture. There is a drive through it in all directions. There is ample space on both sides of the drive for stacking the apple crates. There are false floors beneath to permit ventilation. Inlets at the base permit entrance of cool air and vents in the roof allow warm air to pass out. In building such a house, an excavation is made extending about six feet below the surface. A concrete wall is built around the structure to a height of about 10 to 12 feet. A low roof frame is constructed. Trimmed poles are laid over the frame, and woven wire is then placed over the poles and tacked to them. A three-foot layer of straw is then applied, and about two feet of earth are placed over the straw. Houses of this kind are very common in southern Idaho and a large proportion of the apple crop is stored in them. The apples are quite often kept successfully in them until April. Such apples do not deteriorate as rapidly as those placed in cold storage. It is probably the cool nights

(*Concluded on page* 30)

The HARVESTER Company offers you a COMPLETE Line of 4-CYLINDER Tractors

The 4-Cylinder McCormick-Deering FARMALL

The McCormick-Deering 10-20, 15-30, and FARMALL Tractors maintain the basic design proved right by Harvester experience

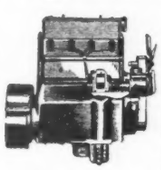
IN 1922 this Company brought out the two well-known tractors—the McCormick-Deering 10-20 and 15-30—fine rugged outfits to fit the requirements of general farming. They have been a wonderful success. Many improvements and refinements have been added but the *basic design, including 4-cylinder engine and 2-bearing, ball-bearing crankshaft,* stands more firmly today than ever with the Company and the farm public. McCormick-Deering 10-20 and 15-30 tractors have become the quality standard of the world, the pride of every owner.

In the meantime the company has bent every effort to solve the special power problems of row-crop handling. As the result of years of developmental work we have introduced the McCormick-Deering FARMALL, specially built for planting and cultivating corn, cotton, and other row crops, and at the same time as perfectly adapted for plowing, drawbar, belt and power take-off work. The FARMALL is the true all-purpose tractor.

These three McCormick-Deering tractors, available at the McCormick-Deering dealers' stores throughout the United States, *make true horseless farming possible.* In them you will realize the full economies that result from the right practice of tractor farming.

Rely on the McCormick-Deering reputation and after-sales service. *Our firm belief in the design of these tractors is your best assurance of complete power farming satisfaction in years to come.*

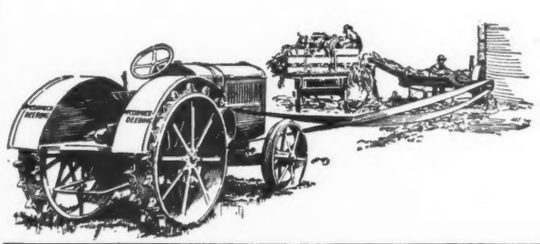
4-CYLINDER POWER *is Standard in Harvester Design!*



All McCormick-Deering tractors—10-20, 15-30, and FARMALL—have the *modern* power plant, a fully enclosed, heavy-duty 4-cylinder engine proved by our many years of farm power development to be the most practical power plant for the tractor. We began a quarter century ago with 1-cylinder design, progressed to the 2-cylinder types and outgrew the 2-cylinder period just as the automobile has done.

Our 4-cylinder tractors give the farmer liberal power, steady running, and wonderfully flexible, easy operation not to be obtained by other types. Vibration and surplus weight are reduced to the minimum, parts are properly balanced, all-wearing parts are replaceable, and long life is assured the tractor. The performance of the many thousands of 4-cylinder McCormick-Deerings is convincing evidence of correct design.

INTERNATIONAL HARVESTER COMPANY
OF AMERICA
(*Incorporated*)
606 So. Michigan Ave. Chicago, Ill.



The 4-Cylinder McCormick-Deering 10-20 2-Plow Tractor

The 4-Cylinder McCormick-Deering 15-30 3-Plow Tractor

XUM

You turn a faucet —the rest is *Automatic*

WHEN the user of a D-L Water System turns a faucet, he gets a strong, steady flow of fresh water. He doesn't have to think about it — he doesn't worry about the pump getting out of order—he doesn't have to adjust anything. He simply turns the faucet and gets water.

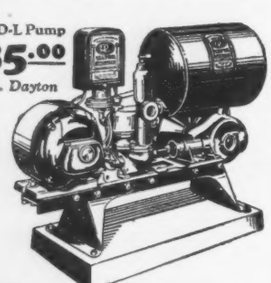
This year-round dependability is the reason why thousands of farmers—and city home owners, too—have chosen D-L Water Systems. Dependability that is backed by the reputation of Delco-Light Company, pioneer builders of farm electric plants —by the great resources of General Motors Corporation, and by a nation-wide organization of trained sales and service representatives.

D-L Water Systems are made in a selection of models to fit any purpose—on the farm or in the city—for deep wells, shallow wells or cisterns—to use with central station current or with a farm electric plant.

Write today for complete information about D-L Water Systems.

Made and Guaranteed by
DELCO-LIGHT COMPANY
Subsidiary of General Motors Corporation
Dept. E-44, DAYTON, OHIO

This D-L Pump
$85.00
f.o.b. Dayton



DL WATER SYSTEMS

DELCO-LIGHT COMPANY
Dept. E-44, Dayton, Ohio

Please send me, without obligation, your complete catalog of D-L Water Systems.

Name.....

Address.....

City..... *State*.....

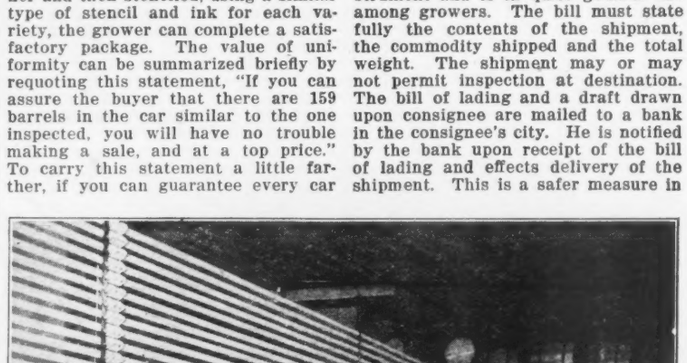
County .....

Picking, Handling and Shipping Apples

(*Continued from page* 10)

of sizes and colors so that each package will approach a set standard of uniformity.

If each barrel, basket or box is nailed or secured in a uniform manner and then stenciled, using a similar type of stencil and ink for each variety, the grower can complete a satisfactory package. The value of uniformity can be summarized briefly by requoting this statement, "If you can assure the buyer that there are 159 barrels in the car similar to the one inspected, you will have no trouble making a sale, and at a top price." To carry this statement a little farther, if you can guarantee every car to be of a set standard, year in and year out, you can disregard any legislative regulations as to standards, for you will have attained a place of independence.



The Marionville Co-operative Cold Storage Plant, with its new addition, now has a capacity of 80,000 barrels

Shippers' Hints

A good plan is to notify the railroad agent a month in advance of the shipping season, giving information about the following details:

1. Switch where loading is to be done.
2. Probable date of first shipment.
3. Probable number of cars needed each week.
4. Probable total number of cars required.
5. Type of cars needed.
6. If refrigerator cars, whether dry or iced.

With this information at hand, the railroads are able to take care of a shipper's needs. A reserve supply can be maintained, and when the shipping season begins, a grower's request for cars can be filled without delay.

Cars not set iced are allowed 48 hours for loading. The time is usually figured from the first 7:00 a. m. following the date the car is set. Iced refrigerators are usually allowed only 24 hours for loading. If the shipper does not load within the prescribed time, he is liable to a demurrage charge.

Billing Cars

Shipments of two types are in general use: (1) straight and (2) shipper's orders. The straight bill of lading is a simple authorization to the carrier to deliver the car and contents to the consignee at the stated designation. This type is used between parties where previous experience has developed trust. It is not to be recommended in any cases where uncertainty exists, for the grower has no recourse upon the railroad in case fruit is not paid for. However, straight bills or "open" shipments are satisfactory when dealing with reputable organizations, and they are generally recommended for all shipments of perishables.

The "shipper's order" bill of lading must carry an order issued by the shipper through a bank in the consignee's city, before the shipment can be delivered. It is a negotiable instrument and is in quite general use among growers. The bill must state fully the contents of the shipment, the commodity shipped and the total weight. The shipment may or may not permit inspection at destination. The bill of lading and a draft drawn upon consignee are mailed to a bank in the consignee's city. He is notified by the bank upon receipt of the bill of lading and effects delivery of the shipment. This is a safer measure in making shipments where any doubt exists.

In billing cars, whether straight or open, there are certain protective features that should be clearly understood. These are effective only when included on the bill of lading, and the shipper must designate the type of service he desires, as follows:

1. "*Standard Refrigeration.*" Under this service the railroad agrees to ice the cars whenever necessary and to deliver the shipment under sufficient ice to maintain refrigeration protection.

2. "*Standard Ventilation.*" This authorizes the railroads to use their judgment in the ventilation of cars. It is more comprehensive than "Vents open" or "Vents closed." The climatic conditions at destination may be different from those at the point of origin and a car billed "Vent open" might be subjected to extremely low temperatures. Where billed under standard ventilation, the vents will be adjusted to meet prevailing climatic conditions.

3. "*Storage in Transit.*" Fruit that is being shipped to storage should always be billed under the "storage in transit" privilege. When sold, it can be shipped to final destination under the through rate charge. If this is not noted on the bill of lading, however, the shipper must pay the extra cost of the two hauls.

4. "*Shipping Options.*" These are designated as Option One and Option Two. The railroads have set October 15 as the date ending safety for shipments originating from areas subject to low temperatures. The shipper of perishable products must state on his bill of lading which service he desires.

Option One is the shipper's protective service. The railroad contracts to protect such shipments from injury, and an extra charge is made for the service.

Option Two is the carrier's protective service. The shipper assumes full responsibility under this option and has no recourse in case of damage in transit from low temperatures.

Diversion

If for any reason a shipper desires to change the destination of a rolling car, he may do so by filing with the local agent or other authorized agent of either the receiving or delivering line an order for diversion. This order must cover car number and initials, contents, consignee, destination, shipping point, date of billing, name of shipper and also the name of new consignee and new destination. By adding "Protecting through rate" the shipper protects himself against a combination of local rates.

Notification of Shipments

Fruit sales are often made to cover shipments in transit, and most fruit buyers demand wire service on shipments being sent to their order. The grower should include all information needed for each car, including:

1. Date of shipment.
2. Loading point.
3. Car number and initials.
4. Contents.
5. Grade.
6. Destination.

The following specimen wire may serve as a guide:

COLUMBIA, MO., SEPT. 15, 1926.
W. R. BROWN & COMPANY,
MINNEAPOLIS, MINNESOTA.
ROLLING TODAY COLUMBIA WABASH 16432 CONTENTS SIXTY-THREE BARRELS NUMBER ONE JONATHANS NINETY-SEVEN BARRELS NUMBER ONE GANO STOP N Y D X 13732 CONTENTS FIVE HUNDRED FOUR BASKETS FANCY JONATHANS.
JOHN DOE.

Shipping Point Inspection

The inspection of fruit at shipping point is one of the most valuable services to the fruit grower. Under the supervision of both the federal and state authorities, grades, standards and packs are more rigidly maintained. The certificate of inspection received by the producer enables him to deal in a more businesslike way with buyers. The buyers also know that they cannot reject or refuse federal and state inspected fruit without proper procedure and check-up. The inspection certificate is prima facie evidence that fruit of a certain grade left the shipping point in condition suitable for its arrival at destination in marketable condition. It adds force, life and confidence to contracts regarding grade, marketable condition and carrier's responsibility. The certificate is without question invaluable in the proper adjustment of claims and controversies between shipper, buyer and carrier.

Reduce Insect Damage by Fall Treatment

(*Continued from page* 3)

codling moth, most of which will complete their growth in the apple and crawl to nearby trees or other shelters, where they will spin their cocoons and go through the winter. Where the codling moth is increasing as it is at the present time, it is highly important that we do not permit the accumulation of cull apples close to or in our orchards. The culls should be dumped at some distance from the orchard, fed to hogs or buried to a depth of a foot or more to prevent the escape of the codling moth larvae which they contain.

Apple Flea Weevil

This little black, jumping, snout beetle has been the cause of considerable damage in Illinois and Ohio orchards during the past few seasons, and is apparently again on the increase in these and adjoining states. The flea weevils go into their winter quarters early in the season; in fact, most of them will have hunted up a winter resting place by August 1. Most of the flea weevils hibernate in the grass, leaves and trash immediately under the apple branches; the greatest numbers will be found within two or three feet of the base of the trees. Where these insects have been causing considerable damage, it is advisable to thoroughly cultivate and stir the ground under the trees some time after the last of October. If it can be done, such cover should be

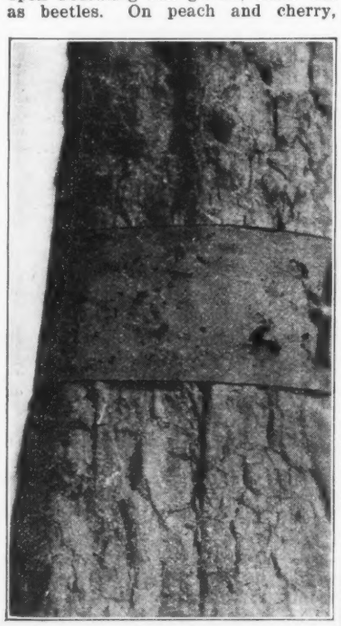
burned over, preferably with a blow torch which will kill nearly all of the hibernating flea weevils. Care will be necessary where the torch is used to see that the fire does not injure the trees. Raking out the leaves or trash under the trees after the weather has turned cold will be of some benefit in exposing the weevils to the winter weather and thus killing them.

Peach Tree Borer

During the past five years the treating of peach trees with paradichlorobenzene (P. D. B.) for killing peach borers has come to be an almost universal practice in commercial orchards. The question is still frequently asked as to the best time for putting on the P. D. B. treatment. S. C. Chandler of the Illinois State Natural History Survey has been making careful observations on this point for the past six years. The data which he has gathered show that for the latitude of southern Illinois the P. D. B. should be applied some time between September 25 and October 20. For northern Illinois the applications should be made between September 10 and October 5. Paradichlorobenzene should not be applied so early in the year that the borers may lay eggs about the bases of the trees after the material is applied, nor so late that the soil temperature will be so cold as to prevent a discharge of gas from the crystals. In the latitude of extreme southern Illinois, eggs of the peach tree borer may be deposited up to the last of September, so that it is not advisable to apply the gas until after this date. There is also somewhat greater danger of injury to the tree if the gas is applied when the soil is very warm, so that practically all of the crystals change to a gas within a few hours after they are placed in the soil. On the other hand, the gas is given off so slowly when the soil is below 60 degrees Fahrenheit that it is not, in most cases, advisable to apply the crystals at such a time. A poor kill of borers nearly always results under such conditions.

Shot-Hole Borer

Every year, and especially in dry years, many peach and cherry trees are injured by shot-hole borers. These little beetles, in which stage they exist during the summer, make holes in the bark of trees about the size of a No. 6 shot. Under these holes they excavate short galleries in the inner bark, and along these galleries they lay a number of eggs, which hatch into small pinkish-white grubs. These grubs burrow through the bark, and upon becoming full grown, come out as beetles. On peach and cherry, wherever they come out through the bark, a little wad of gum will be found. On heavily infested trees the trunk and larger branches will be covered with these masses of gum. While the insects are in the adult stage, they fly about and are very difficult to control. In the winter time, however, the adult beetles are all dead, and the insect exists only in the form of a partly grown grub in the inner bark of infested trees. In orchards where these insects are becoming destructively abundant, all the heavily infested diseased or dying trees should be cut down and carefully burned during the winter months, in this way cleaning out all of the shot-hole borers that are in the orchard. In many cases, single branches will be infested on a tree, and these should also be cut off and burned during the winter.



Codling moth worms will collect under tar paper bands placed around apple trees. The holes shown in this picture were made by birds in removing worms which had collected

Round Headed Apple Tree Borer

Every young apple orchard should be carefully gone over during the early fall and examined for the presence of borers in the trees. During the latter part of August or September, make it a point to remove the earth for two or three inches about the base of the trees, and examine the trees carefully for the presence of small chain-like masses of saw dust, which are being forced out of the bark, also for small, irregular, dark colored areas in the bark just at or above the surface of the ground. If these areas or masses of sawdust are found, the bark should be carefully removed with a sharp knife, cutting as much as possible with the grain of the bark, and the young borers cut out or probed out by means of a short piece of flexible copper wire. If a general inspection of the orchard is made at this season, little injury from the borer will occur. The flat headed borer may also be found higher up on the trunk, especially on the sides of the trees which have been exposed to sun scald, and these may be dug out and removed at the same time.

Fruit Tree Leaf Roller

During the past few years the insect known as the fruit tree leaf roller has been extremely destructive in orchards throughout the western apple growing sections. In 1922, 1923 and 1924 this insect appeared in considerable numbers in many orchards in the Middle West, causing a loss of as high as 50 per cent of the fruit in some of these orchards. It has never been found possible to control this insect in a satisfactory way by summer spraying, and here again we must depend upon our fall and winter clean-up of the orchards in order to get control.

The best and most practical method of fighting the fruit tree leaf roller is to spray with an oil at a strength of from six to eight per cent. This application is given to kill the eggs of the leaf roller on the branches and twigs of infested apple trees. In many apple growing sections this insect is becoming of such importance that a fall and winter clean-up of the egg masses is absolutely essential if a profitable fruit crop is to be raised in the orchard.

Nut Growers' Convention

THE SEVENTEENTH annual meeting of the Northern Nut Growers' Association will be held at Lancaster, Pa., September 14 to 16. Speakers of national prominence, amateurs, workers in federal and state experiment stations, and others will address the convention on different phases of nut culture.

Those in attendance will have an opportunity to ask questions, and these will be answered by some of the best experts in the country. A trip is also planned through the beautiful country in the vicinity of Lancaster. A visit will be made to the Rush place, where the first grafted English walnut trees were planted in the eastern United States. The nut nursery and orchard of J. F. Jones will also be visited. Here one may see nuts of many kinds in bearing, as well as some of Mr. Jones' originations. Demonstrations of budding and grafting nut trees will be given for those interested in seeing this work done.

Detailed information may be secured from Secretary A. S. Colby, Urbana, Ill.

You see it on Every Highway

Study the Pontiac Six. Note the large engine with its 186.5 cu. in. displacement; the 46 lb. crankshaft; the costly bronze-backed interchangeable bearings; the superior Fisher bodies, panelled, beaded and smartly finished in Duco; the scientific distribution of weight—and score after score of features literally without precedent in a six at $825.

That is why the "Indian head" is seen on every trail and highway.

That is why Pontiac leadership cannot be denied—why already over 50,000 Pontiac Sixes have been built—a record that exceeds the largest production ever attained by any new make of car *during its first full year!*

SEDAN OR COUPE $825 BODIES BY FISHER

Pontiac Six Landau Sedan $895. Oakland Six, Companion to Pontiac Six, $1025 to $1295. All prices at factory. Easy to pay on the liberal General Motors Time Payment Plan.

OAKLAND MOTOR CAR CO., PONTIAC, MICHIGAN

PONTIAC SIX

CHIEF · OF · THE · SIXES

The Orchard Home Department

By Mary Lee Adams

On the Gunnison

I'M HAVING a wonderful time away up in the Colorado Rockies where all the men and some women pull on wading boots after an early breakfast and go down into the cold mountain streams, hoping to bring back creels of fresh trout.

But whether the fish basket be full or empty, the same jolly expression is seen on the faces of the returning fishermen as they wore when they set out. I haven't heard a single captious or complaining word since I've been here. Without the least hesitation I would say these people are having a better time, really enjoying themselves a lot more, than the tourists I've seen at the finest resort hotels.

And I'm asking myself why there is manifest such a general spirit of contentment and joyousness. True, the scenery is very beautiful, but I've a suspicion that some of the guests would admire a city skyscraper as much. The air is fine and invigorating—so it is in many other places. And in most other places, in the majority of our orchard homes for instance, greater comfort and convenience may be found than in this little collection of log cabins grouped about the rough cobblestone house.

Here we actually live the simple life that so many of us profess to admire and most of us work our fingers off to avoid. So it's something other than living conditions which keeps us all in such good temper that we've forgotten we were ever inclined to be fussy or cross.

I believe it's the spirit of a little old woman, the presiding genius of the place, which keeps the guests happy and brings them back year after year. Some have been returning every summer for 20 years. They can rely on the same cordial welcome. Always they are made to feel that their pleasure is the first aim of the hard-worked hostess.

So cheerfully and amiably does she direct her household, from cook and waitress to those seated at her board, that if a grumbling word rises to the lips of a visitor it is held back for shame. Little sympathy would be shown to one who indulged in criticism of good "Ma" Brittain.

Why, I've seen men who at home would tear a bird's nest from their door, call to others, "Come see this cute little swallow building in the chink over my steps." Things look different, you know, depending on how we look at them.

It is certain that no member of the household has as much influence in molding the spirit of the family as has the mother and homemaker. Are your children happy in their home? When they are grown, will they return to you year after year as do the unrelated children of "Ma" Brittain? It lies largely with you whether the home is a place of joy and good will or one of discontent—a place it is good to be in and return to, or one it is good to get away from.

Good Roads—Better Homes

IT IS recorded that in 1924 there were 19,656 rural school motor-buses in operation in the United States. There are more now. Probably your children ride to school in one of them. If a good road passes your orchard home, so does one of these buses which make it practicable for so many rural children to attend consolidated schools.

And the Rural Free Delivery likely motors by your way bringing news of the world in print, news of loved ones in letters, and taking your own home news to cherished correspondents. What would you do without these faithful carriers?

Practically all your social contacts depend upon good roads. There are few enterprises of which the advantages are more obvious than the ambitious plan of our government to provide this country with a system of good roads unrivaled by other nations.

There are many inestimable benefits brought about by good roads. All of us must realize their commercial advantages. Not by any means inferior to these is the binding together of our nation in a unit of intercourse which overcomes sectional prejudice.

The saying that "Friendship is a matter of streets" is not so cynical as it sounds. Every good road that is opened acts as a strand in the web that unites us in fellowship. How can we feel any lively sympathy with the inhabitants of Mars—if there be any such? There's no road from here there, and we've never seen them. Carolina and California would be scarcely less indifferent to each other but for the national highways.

On a motor tour that I made in July, observing the orchard homes of the country from my Virginia home to the Pacific Coast, we drew up in a little Colorado village and there, parked side by side, stood a car from Portland, Me., almost touching one from Portland, Ore. As our car topped an 11,000-foot Rocky Mountain pass on the Ocean to Ocean Highway, we came face to face with cars from Utah, Texas and Oklahoma. We are indeed one country.

If you are still grieving over the road tax, remember that property values are greatly increased by good roads. E. McK. Fisher, in his excellent work on real estate, quotes G. C. Haas to the effect that "farm land values in one county in Minnesota indicate that the value added to land in that county by a state macadam road was $21.92 an acre." It's worth while to work to secure better roads in your community.

Expenditure Not Reckless

WE'VE been told so often that people are now utterly reckless in their expenditure and that a crash is sure to come to a nation that mortgages its future for all sorts of extravagances. At times we grow decidedly uneasy and wonder if we should not set a good example by doing without.

Common sense should tell us where to stop, but it is reassuring to find that one of the best and most conservative of investments is gaining in popularity and volume. Life insurance is progressing by leaps and bounds. Last year 15 billion dollars' worth of life insurance was bought by our people.

This year bids fair to run well ahead of that stupendous figure. The fact that the agricultural states make a particularly favorable showing checks the inclination to look askance at farming as a means of livelihood. After all, it is not enough for the farmer to be assured that without him the country would starve. He's not keen on starving himself, even with a clear conscience.

Those who have dependents especially cannot do better than to take out life insurance. They will sleep better at night. Many a man has worn himself out for his family but has not shown the forethought to plan for the possibility of his own untimely removal. It looks, however, as if there were fewer of these thoughtless persons than ever before.

Where They Go

The head of the firm caught the office boy telling falsehoods.

"I'm surprised at you," he said. "Do you know what they do with boys who tell lies?"

"Yes, sir," was the reply. "When they get old enough the firm sends them out as traveling salesmen."—*Boston Transcript.*

Train Up the Child

AFTER taking a dip into some advanced literature on child psychology, I find my vocabulary handsomely enriched by such terms as mental hygiene, self-expression, inferiority complex, inhibition, compensation, sublimation, substitution and a score of other modish expressions.

No wonder that mothers feel a disconcerting sense of inadequacy as they ponder the complications that have arisen about their age-old job that used to be called "raising" children. That always meant more than simply bringing them to manhood and womanhood. It implied such judicious bending of the twig as would assure the right inclination to the full grown tree.

If the tender twigs were trained in the fear of God, directed toward obedience, unselfishness, truthfulness, honesty, industry and affection, if their brains were nourished during a sufficient number of school hours and their bodies built up with plenty of wholesome fare supplemented by household remedies and an occasional horrible dose of calomel from the neighborhood practitioner, the mother could feel that she had performed her whole duty toward her offspring. And it was a man-sized job at that.

We've Changed All That

But as we look back, that all seems to have been in an age of almost pastoral simplicity. Certainly no one had yet ventured to suggest (as was done in a recent educational discussion) that every school child should be psycho-analyzed at least twice yearly. No mothers' meeting discussed "mental hygiene" under that title, though the idea in a crude form was ever present.

I am left with the impression that "a little learning is a dangerous thing" and therefore mothers should be very cautious in tampering with a comparatively new science which is still somewhat obscure even to the pioneers along that route. Yet it would be lacking in intelligence to refuse the aid of such progress as has been accomplished so far.

Many phrases that ring strangely in our ears turn out to be old friends with new faces. We may not have called it "substitution" when we suggested to Johnny that he mend the old chicken coop with his new hammer because we wanted to stop him from driving nails all over the house.

We did not think of it as helping timid little Lucy throw off her "inferiority complex" when we praised her bungling stitches on dolly's clothes. And when the boys grew noisy and we said, "Run out now and play Indian," we never spoke of the game of adventure as "self-expression."

Crowd Out Bad with Good

But the stressing of these things, the bringing of them clearly out into the light, is most helpful. The idea of replacing the reiterated and depressing *don't*, with the cheery and constructive *do*, is a blessing alike to parent and child. A child whose hands and mind are constantly occupied doing something desirable, has no time or thought to spend on the "*no, no's.*"

Not all that seems undesirable in children really is so. It has been proved that the most mischievous child, who is always getting the others into trouble, is apt to be a born leader and has in him the makings of a distinguished man. All he needs is that his surplus energies be turned into useful channels. He may then become as strong a factor for good as he was hitherto for evil. Whether we call this process "sublimation" or not, it is a worthy aim for parents or teachers.

At one time it was held that "the child should be pressed, beaten if necessary, into the form that its elders think it should assume." Today, most parents realize that they do not own their children in the sense of chattels. "They but hold their children's lives in trust for the future." This is a sobering conception, for we are held to account for what we hold in trust.

The investigating mother who peeps into the pages of child psychology, is told that even today "the tendency of parents and teachers is to attempt to mold the personality of the child into the form that they think is right." "So far so good," thinks our modern mother, "That's what I do." But, alas, her satisfaction is short-lived. "This tendency is almost sure to be a wrong one."

The poor mother is at sea. Shall she mold her treasure as she thinks wrong, or not mold him at all? This last avenue of escape is soon closed to her. She finds it firmly asserted that it is the way her child is handled and developed during the first few years that will most likely decide whether her beloved boy will become a healthy and happy man or an ill and suffering one. "There's no time to lose!" she cries, but her head spins.

Common Sense to the Rescue

Yet there is balm in Gilead. She learns that she should allow the personality of her child full play in the maximum development of his individual possibilities, but only insofar as is "consistent with the necessary degree of conformity to social standards."

This "only insofar" sustains and steadies her when she is about to fall between the two stones of allowing unfettered self-expression and the temptation to try to force him along what she considers the most desirable lines.

The first method would result in an intolerable, anti-social little savage whose personality, however pleasing to himself, would likely lead in later life to his being locked up where he could not trample about regardless of others. The second method, if successfully carried out, could but result in a most unsatisfactory creature, who would be deprived of all impulse and initiative.

Greatest of These Is Love

Very consoling to the mother, it is to be told that, after all, the quality of her love counts for most in the future of her child. That love must not be self-seeking in any way, not the kind that would cross the child in following his bent later when choosing a life's work or a life's mate, simply because that choice would not minister to the parent's personal pride.

Probably we had no need to wait to be told that children are most tremendously influenced by their parents. We even guessed before that what the parent really is has far greater influence than what the parent does. A sixth sense of childhood seldom fails to read us aright.

A New Parental Duty

The modern parent's duty is to hold up the hands of those organized forces for the benefit of childhood which formerly did not exist. I refer to the medical aid which public schools now offer in greater or less degree.

We have read too much of the far-reaching ill effects of bad teeth not to appreciate the dental clinics. We value eyesight at its true worth and welcome the examinations for pupils. We have learned that it is futile to say, "Oh, well! my Johnny may be underweight, but he is well, and brighter than the others." We know now that Johnny would be both better and brighter if he were of normal weight.

Parents can do much to make the work of doctors and nurses easy for them and of inestimable benefit to the children.

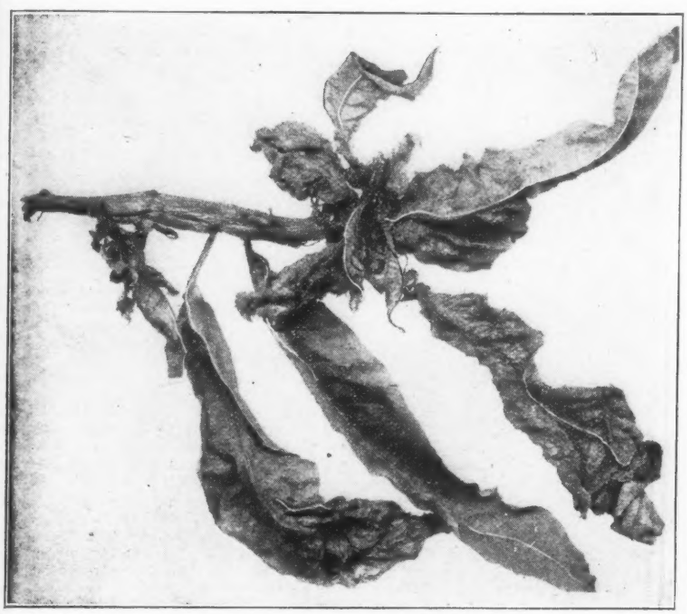
Fall Campaign Against Fruit Diseases

(*Continued from page 4*)

while important steps may be taken to increase the efficiency of the usual control measures applied the next growing season to such diseases as brown rot and shot-hole, or black-spot.

Fall Spray Controls Leaf Curl

The very best time to control leaf curl is in the autumn after the leaves fall and the season's growth has hardened. The fungus causing curl winters around the buds so that a fungicide applied any time during the dormant season will be satisfactory. Spring spraying, as formerly practiced, is unsatisfactory, since there is difficulty in getting on the land and there is the danger of not getting the spray on before the buds swell. After the buds swell, it is too late to control leaf curl. Lime-sulphur is the most effective fungicide for curl, although Bordeaux oil may be used if mites are present. One application is sufficient. Hit every bud if complete control is expected.



Peach leaf curl destroys or weakens the leaves, in which the food of the tree is manufactured. A single application of spray in the fall prevents it

The common summer disease of the peach is brown rot. One of the chief sources of the rot fungus spores in the spring and summer is the old mummified peaches from the previous year. In many peach districts the old dried fruits which cling to the tree are more dangerous than those on the ground. In either case, however, destruction of these old mummies, whether hanging or fallen, is emphatically a point in sanitation not to be overlooked. Some growers knock the hanging mummies from the tree during the pruning operation. Early spring plowing and stirring of the soil prevents the spores from shooting. Others prefer to gather all mummies, as far as possible, and remove them from the orchard. This latter practice is to be commended, especially if the orchard is not cultivated.

During the pruning operations, it is important to remove twigs that show blighted spurs, etc. Such spurs also carry the brown rot fungus through the winter. Their removal in the fall, while their marks are still fresh, is a valuable adjunct to the brown rot spraying campaign that is to follow the next season.

Other fall work in the peach orchard may include, with profit, the following: (1) destroy as far as practicable old leaves in instances where black-spot (shot-hole) is prevalent; (2) use gas treatment for peach borer late in September and early October; (3) clean up stone piles and stone walls, overgrown hedges and fences and destroy all trash in which curculio beetles hide away for the winter; (4) in the South, it has been found that post-harvest applications of lead arsenate will kill many adult curculio beetles before they go into hibernation. Where curculio infestations have been severe, such applications are profitable. Use hydrated lime (90 parts) and lead arsenate (10 parts) as a dust four weeks after harvest and repeat after two weeks. Spraying at this time with lead and lime causes severe foliage injury.

Late Spraying for Cherry Leaf Spot

After harvest, cherries should be sprayed for leaf spot. This procedure protects the healthy foliage areas against late infections. Lime-sulphur 1-50, with one and one-fourth pounds lead arsenate added for slugs, is advised. As time permits, in the fall, it is well to inspect cherries and plums for black knot. Affected twigs and limbs should be cut out. In severe cases of black knot, a late fall or early winter application of Bordeaux mixture is logical.

Avoiding Severe Winter Injury

Certain considerations looking to the avoidance of winter injury are worth while in the early fall: (1) avoid late cultivation and fertilization; (2) cover crops help in the hardening process; (3) whitewashing to deflect the heat of the winter sun and to reduce heat absorption is worthy of use; and (4) look to orchard draining.

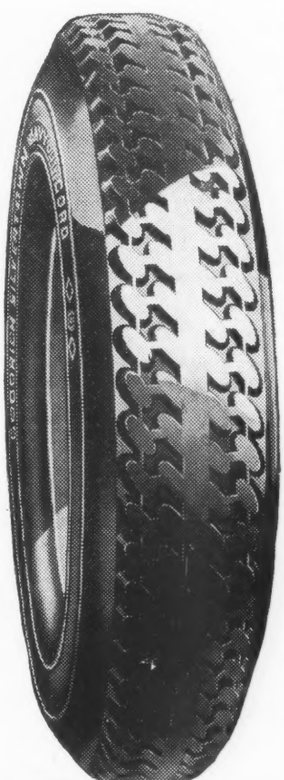
The bramble patch should be inspected. Cut out and burn old canes as soon as possible after fruit is harvested. Dig up and destroy both wild and cultivated plants affected with orange rust.

In the vineyard, destroy old bunches of grape mummies which cling to the wires. These are troublesome sources of the black rot fungus in the spring.

The storage house should be cleaned up in advance of storing the fruit crop. It should be remembered that one of the objects of storage is to prevent the growth of parasitic organisms. If these are allowed to accumulate in the store house, they are troublesome in causing storage rots.

It is plain that while the summer has been and still is the popular time for fruit disease control, there is much that can be done in the fall, and with profit. There are many leaks in fruit growing and not the least of these is disease. If some of the holes are mended in the fall, fewer will demand attention the next year.

Good word tonight
—and crops move in the morning!



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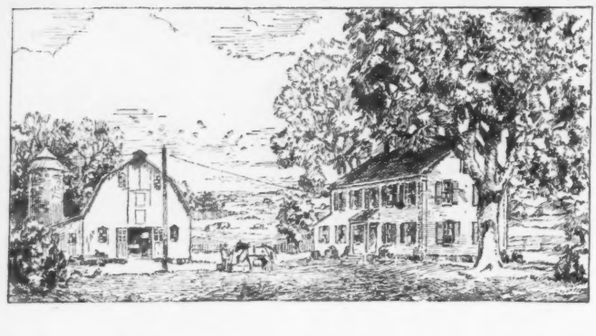

The Telephone and the Farm

THERE was not a farmer in the world fifty years ago who could talk even to his nearest neighbor by telephone. Not one who could telephone to the doctor in case of sickness or accident. Not one who could telephone for the weather report or call the city for the latest quotations on his crops. Not one who could sell what he raised or buy what he needed by telephone. A neighborly chat over the wire was an impossibility for the farmer's wife or children.

In this country the telephone has transformed the life of the farm.

It has banished the loneliness which in the past so discouraged the rural population and drove many from the large and solitary areas of farms and ranches.

It is a farm hand who stays on the job and is ready to work twenty-four hours every day.

The telephone has become the farmer's watchman in times of emergency.

It outruns the fastest forest or prairie fires and warns of their approach. It has saved rural communities from untold loss of lives and property by giving ample notice of devastating floods. Three million telephones are now in service on the farms, ranches and plantations of the United States.

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CHATS WITH FRUIT GROWER'S WIFE

By HAZEL BURSELL

The Girl and Her Clothes Problems

OUR COLUMN will be devoted to the young girl and her clothes this month. But even though the appeal is directed to the girl in her 'teens, Mother will doubtless be an interested reader.

Now really, my young friends, how do you treat your clothes? Have you ever thought that the clothes you are *not* wearing are about as important as the ones you have on this very minute? You see, if you don't treat them right, they'll retaliate and not treat you right. They'll look shabby before their time; they'll wrinkle up and rip when you want them to look their best. They'll rebel at being overworked.

Clothes, after all, are not unlike ourselves. We have to rest them occasionally. We have to keep grooming them—brushing, cleaning, airing them—to keep them looking fit. There is something else about clothes that's similar to ourselves, too. You know it isn't half so hard to remember to manicure your nails if you have a fine new manicure set. Now is it? Well, I'll wager it won't be half so difficult to remember to hang up your best frock or your old one, for that matter, if you have attractive dress hangers.

Need Pretty Clothes Hangers

The new hangers are so pretty that any girl would like to have a whole set, one for each garment and a few to spare for emergencies. Some are made of enameled wood and come in light blue, rose, coral or yellow, decorated with hand-painted flowers. And to add to their daintiness, they have hanging from the hook a little silk bag filled with sachet powder. You can easily paint them yourself at very little expense. Just buy unpainted wood hangers, brushes, and enamels in the chosen colors. Apply the enamel to the wood, using one or two coats as needed. Hang up by the hooks to dry before applying the second coat or the decoration. Simple little sprays or clusters of flowers and leaves can easily be painted on and will add much to the appearance of the hangers. The padded silk or corduroy covered hangers also come in various pastel colors. Some of them have fitted covers, while others are wound with gay-colored ribbon. Some of the newest coat hangers are ornamented with faces of vampires or of Aunt Jemima all done in cloth. Can't you just picture them?

Then you know about the big, dress-length bags for protecting your dresses, I'm sure, but perhaps you haven't any yourself. They really are a wonderful protection and look dainty and pretty hanging up in the closet, if they are made of flowered cretonne, dimity or lawn. The most convenient type of bag has an opening from the top for about 10 inches down, fastened with buttons and buttonholes.

Shoe Drawer Practical

Wouldn't it help you to remember to put your shoes away if you had a row of pretty shoe trees in your closet? You can get hand-painted ones now-a-days that are practical as well as good looking. In fact, many girls buy the unpainted ones and decorate them to match their coat hangers. A novelty type of tree has the front part of perforated enameled tin, while the back is curved and shaped so that it may be used as a shoe horn. Many girls prefer a large, built-in drawer on the floor of the closet for a shoe cache. Others with less floor space use a wall mat with many pockets, but this method will use more closet space and will still permit dust to fall on your shoes.

If you have room, do get the box habit. Cretonne-covered shoe boxes with straps for shoes, hat boxes and sweater boxes are wonderfully convenient. They will also add another gay touch to the room. You will find that the more attractive and dainty you make your room throughout, the more incentive you will have to keep it neat and orderly at all times.

Strive for Harmony

Now, just a word about the harmony of clothes. You know, there are certain things you simply can't wear together, though each may be lovely in itself. They clash in color; they are inappropriate in design or fabric or both. There's your tailored suit, for instance, made of jersey or crash. Look out for the hat you wear with it! If you don't, you'll lose all your smart appearance. Perhaps you're set on having one of those lovely new lace hats. I know how becoming the floppy transparent brim is, and how fascinating the delicately colored ribbons are. But if you do buy the hat, don't wear it with your tailored suit. It's out of place, and you can just believe it will have no qualms about proclaiming it. Just think how much smarter you'd look in one of the new and becoming felts with contrasting colored ribbon trim. In purchasing hats, keep in mind the costumes with which you must wear the new chapeau and buy accordingly. If you can afford only one or two hats a year, you must exercise great care in choosing your "one and only."

Don't wear an elaborately embroidered georgette blouse with a wool skirt of gay plaid. Such a blouse belongs with a skirt of taffeta or crepe de chine. The plaid wool skirt looks its appropriate best with an overblouse of jersey or sports silk, a good looking sweater, or just a sailor middy blouse.

Don't wear openwork silk or chiffon stockings with thick-soled, low-heeled oxfords. They should not be worn during school hours or on the street at any time. Don't wear a strap pump or slipper with a high French heel in all kinds of weather and for every occasion. Don't wear it with business clothes or school clothes. High-heeled slippers are permissable for the young girl for evening wear only.

Choose One Gay Color

Don't buy all shades or red, orange, green and purple for your wardrobe in one season—they will "fight like cats and dogs" when you try to assemble a costume. Picture yourself in a purple dress with a coat of green and the whole topped off with a bright tomato-red hat! I have seen even worse combinations than that. Young girls must always have some gay color in their clothes, but if they should choose *one bright color* for any one season, and *build their entire wardrobe around that color* by combining it with harmonizing neutral colors as gray, taupe, tan, black, white and dark blue, they will achieve a wardrobe of interesting, harmonious and distinctive clothes. If one neutral color is retained throughout two successive seasons, much money can be saved, as the same accessories will serve both years.

Don't, just because it is the vogue right now, persist in wearing the fashionable high collar. It's girlish

and stylish, to be sure, and perhaps it does just suit your sister or your chum; but, on the other hand, it may not suit you.

Strive for Originality

Don't dress like your best friend. You may just love her new beruffled taffeta frock, but isn't she tall and thin? Perhaps that's why she selected it, and you may be, alas, short and fat. A thin girl and a fat girl were never intended to dress like twins.

The fat girl, the tall girl, the thin girl and the little girl must learn to dress each for herself. In nine cases out of 10, the other girl's clothes, no matter how tempting you find them, are not for you. You and Mother get together and work out some original and individual ideas for your fall clothes. Try to think up something entirely different from anything which your friends may have. Don't try to have many clothes, but have each costume interesting and complete. If you achieve individuality, you have mastered one of the secrets of correct dress.

Save Your Recipes

HAVE you been saving the groups of recipes published each month in the "Chats with the Fruit Grower's Wife" department of the AMERICAN FRUIT GROWER MAGAZINE?

If you have not saved them in the past, it would pay you to begin with this issue. Those who began saving them when the department first was added in November, 1922, have quite a collection of tried-and-true recipes by this time, with but little trouble and expense to themselves. All you have to do is to purchase a medium-sized, loose-leaf notebook with good quality leaves which will stand much wear. Then cut out the recipes as they come each month, paste each set on separate sheets and place in the book. Start sections for oranges, apples, prunes, pineapple, berries, cake and other things as they are published, leaving pages for later additions to each section. Index tabs for the various sections will add to the usefulness of the book.

Grouping is Convenient

The system for grouping recipes followed in this department will make for a most convenient cook book. Suppose you want to try a new orange or prune or pineapple dessert. All you have to do is to turn to that section in your cook book. If you looked in the ordinary cook book, classified according to soups, puddings, cold desserts, hot desserts, meats, etc., you might have to look a long time for just the recipe that appealed to you, using that particular fruit. We do not know of any other magazine in which the recipes are classified in this manner.

Pickle and Relish Recipes

YE EDITOR likes to try something new along with the old favorites each year—she plants a few flowers in her garden which she has never seen before; she looks for new scenery when she goes vacationing; she feels she must have at least two new hats a year. And then when it comes to canning, preserving, baking, cooking and jelly making, she just has to try some new recipes. She has a positive complex which demands that she store two or three new relishes for the winter. You will be surprised at the results if you will investigate this sure cure for monotony in living—just try a few new and interesting recipes, hats, gowns, magazines, plants, etc. Here's your chance to try some new and zestful pickles and relishes. But don't neglect the favorites for the new!

Apple Catsup

Wipe, quarter, pare and core 12 sour apples. Put in a saucepan, cover with boiling water, bring to the boiling point, and let simmer until soft, when nearly all the water should be evaporated; then rub through a sieve. To each quart of apple pulp add the following mixture: Mix 1 c. sugar, 1 t. pepper, 1 t. cloves, 1 t. mustard, 2 t. cinnamon and 1 T. salt; then add 2 finely chopped onions and 2 c. cider vinegar. Bring the apple pulp, to which the mixture has been added, to the boiling point and let simmer one hour. Bottle, cork and seal while hot. Be sure to use firm new corks and sterilized bottles, as catsup is hard to keep without fermenting.

Beet Relish

1 c. chopped cooked beets	2 T. lemon juice
3 T. grated horseradish	1 t. salt
	2 T. powdered sugar

Mix ingredients in order given, place in sterilized jars and seal. Canned beets may be used for a winter relish.

Dutch Salad

1 qt. green tomatoes	Dutch dressing
¼ c. salt	1 small cabbage
2 qts. small cucumbers	2 cauliflowers
	9 green peppers
1 qt. small onions	Boiling water

3 T. salt

Wipe and thinly slice tomatoes. Place in layers, sprinkling each with salt, cover, and let stand over night. In the morning drain thoroughly and chop. Put in a preserving kettle and add chopped cucumbers, chopped cabbage, cauliflowers separated into flowerets, and chopped peppers (from which seeds have been removed). Add boiling water to just cover vegetables and the 3 T. salt. Bring to the boiling point and let simmer until vegetables are tender, then drain. Pour over Dutch dressing and let simmer 15 minutes. Cool and seal in jars.

Dutch Dressing

Mix 2 c. brown sugar, 1 c. bread flour, ⅛ c. mustard, 1½ T. salt, 2½ T. tumeric. Add gradually, while stirring constantly, 3 qts. of vinegar. Bring to boiling point and let boil until mixture thickens.

Pickled Onions

Peel small white onions, cover with brine, allowing 1½ c. salt to 2 qts. of boiling water, and let stand 2 days; drain, and cover with more brine; let stand 2 days and again drain. Make more brine and let come to boiling point; put in onions and boil 3 minutes. Put onions in jars, interspersing with bits of mace, white peppercorns, cloves, bits of bay leaf and slices of red pepper. Fill jars to overflowing with vinegar scalded with sugar, allowing 1 c. sugar to 1 gal. vinegar. Seal while hot.

Sour!

Wipe one peck green tomatoes and cut in thin slices. Peel 1 qt. onions and cut in thin slices. Sprinkle alternate layers of tomatoes and onions with 1 c. salt. Cover and let stand over night. In the morning drain thoroughly, put in preserving kettle, and add 4 green peppers finely chopped, 6 c. brown sugar, 6 T. celery seed, 6 T. mustard seed, and a bag of spices, including ½ oz. each of cloves, stick cinnamon and allspice berries. Add vinegar to just cover mixture, bring to the boiling point and let simmer slowly for 2 hours.

This relish may be given a very fresh taste by adding a small quantity of celery, cut in small pieces, whenever it is served.

Sweet Crab Apple Pickle

3 lbs. crab apples	1½ t. cloves
2 c. cider vinegar	1½ t. allspice
1 c. sugar	1½ t. black pepper
	1½ t. ginger

Wipe crab apples, remove stems and steam until soft. Tie spices in muslin bag, put in preserving kettle, add vinegar, sugar and apples, bring gradually to boiling point, and let simmer 20 minutes. Seal in sterilized jars if pickles are to be kept for winter, or place in stone jar and cover if for immediate use.

Chopped Pickles

4 qts. green tomatoes	3 t. cloves
	3 t. allspice
1 qt. cucumbers	½ c. mustard seed
1 c. salt	1 green pepper
2 t. pepper	3 sliced onions
3 t. mustard	2½ qts. vinegar
3 t. cinnamon	4 c. brown sugar

Add salt to chopped tomatoes and cucumbers, cover, let stand 24 hours, and drain. Add spices and sugar to vinegar and heat to boiling point. Then add tomatoes, peppers, onions and cucumbers, bring to boiling point and cook 15 minutes after boiling point is reached. Store in stone jar and keep in cool place, or seal in sterilized jars.

Ripe Cucumber Pickle

Cut ripe, peeled cucumbers in halves lengthwise. Cover with alum water, allowing 2 t. powdered alum to each quart of water. Heat gradually to boiling point, and then let stand on back of range 2 hours. Remove from alum water and chill in ice water. Make a syrup by boiling for 5 minutes 2 lbs. brown sugar and 1 pt. vinegar, with 2 T. each of whole cloves and stick cinnamon tied in a piece of muslin. Add cucumbers and cook 10 minutes. Remove cucumbers to a stone jar and pour over the syrup. Scald syrup three successive mornings and return to cucumbers. Place in stone jar and cover, or seal in jars and store for winter.

Table of Abbreviations

1 t. equals 1 teaspoonful.
1 T. equals 1 tablespoonful.
1 c. equals 1 cupful.
1 pt. equals 1 pint (2 std. c.).
1 qt. equals 1 quart (2 pts.).
1 oz. equals 1 ounce.
1 lb. equals 1 pound (16 oz.).
1 gal. equals 1 gallon.

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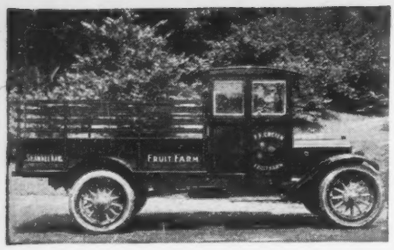

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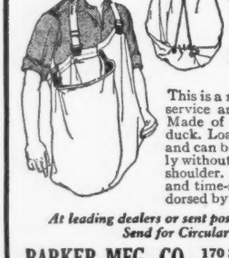

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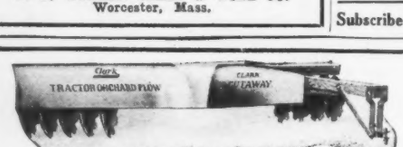

Front view

Built for Orchard Work

Clark Tractor Orchard Plow

You can now cultivate your orchard close to the trees without damage to the low-hanging branches.

For the Clark "Cutaway" Tractor Orchard Plow, built especially for this kind of work, is equipped with a galvanized sheet iron guard, **curved** to gently lift the branches over the machine without injury.

And because it can be worked close to the trees it quickly levels and pulverizes the ridges that have been built up through years of plowing.

The picture shows the disks pulling the soil **away** from the trees, but the gangs can be reversed to throw it toward the trees.

Plows and Harrows in One Operation

The Clark "Cutaway" Tractor Orchard Plow is ideal for breaking old hard sod. And as it will disk in a cover crop without requiring harrowing afterwards it saves time, labor and money. The disks are **forged sharp**—an exclusive Cutaway Harrow feature which prevents cracking, bending or chipping.

Send for further information about this machine and **free book**, "The Soil and Its Tillage." A postal will do.

The Cutaway Harrow Co.
130 Main St., Higganum, Conn.

Rear view

No. 2716 — Frock with Slenderizing Lines.
Cuts in sizes 16 and 18 years, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 3½ yards of 40-inch material with 1¼ yards of 18-inch contrasting.

No. 2819—Dress That Is Summer Chic.
Cuts in sizes 16 and 18 years, 36, 38, 40, 42 and 44 inches bust measure. Size 36 requires 3 yards of 40-inch material with 2½ yards of 4¾-inch ribbon.

No. 2808—Smart Design.
Cuts in sizes 16 and 18 years, 36, 38, 40 and 42 inches bust measure. Size 36 requires 2¾ yards of 40-inch material with ¾ yard of 36-inch contrasting.

No. 2496—Frock with Front and Back Panel.
Cuts in sizes 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 2⅝ yards of 40-inch material with ⅜ yard of 44-inch contrasting and 1¾ yards of ruffling.

No. 2675—Afternoon Model.
Cuts in sizes 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 3½ yards of 40-inch material with ⅜ yard of 32-inch contrasting.

No. 2707—Youthful Design.
Cuts in sizes 16 and 18 years, 36, 38, 40 and 42 inches bust measure. Size 36 requires 2⅞ yards of 40-inch material with ⅝ yard of 36-inch contrasting.

No. 2611—Tailored Styling.
Cuts in sizes 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 3⅝ yards of 40-inch material with ¼ yard of 22-inch contrasting.

No. 2812 — Model with Slenderizing Lines.
Cuts in sizes 18 years, 36, 38, 40, 42, 44 and 46 inches bust measure. Size 36 requires 2⅞ yards of 40-inch material with ¾ yard of 40-inch contrasting.

No. 2799—Cunning Style for Juniors.
Cuts in sizes 6, 8, 10, 12 and 14 years. Size 8 requires 1⅞ yards of 40-inch material with ⅜ yard of 36-inch contrasting and 3 yards of ribbon.

No. 2316—One-Piece Dress for Juniors.
Cuts in sizes 6, 8, 10, 12 and 14 years. Size 8 requires 1⅞ yards of 42-inch material with ½ yard of 32-inch contrasting.

No. 2279—Attractive Dress for Children.
Cuts in sizes 6, 8, 10, 12 and 14 years. The 8-year size requires 1⅞ yards of 40-inch material.

No. 2798—Child's One-Piece Dress.
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Brood Rearing Cycle of the Honeybee

PERHAPS in nature, if continuous nectar flows and warm weather were available, the brood rearing cycle of the honeybee would be continous throughout the year, and for an indefinite number of years, and there would have to be some frequent requeening of the colonies. But in nature there is not a continuous nectar flow, and in most of the countries where beekeeping is carried on extensively, a continued brood rearing cycle is not possible because of the long winter period through which the bees have to remain clustered for protection against the cold. Because of this condition, the brood rearing cycle for any year may be said to start early in the spring and extend until September or December, according to climatic conditions.

In the northern states, brood rearing usually starts about the time pollen is first found on the willows in the spring. If bees are kept in a bee cellar and they are in normal condition, brood rearing will not begin until the bees are set out in the spring. If the colonies have stores and some pollen in the hive when set out, eggs will normally be found in each colony 24 hours after they are put on the summer stands. From then until September or October brood rearing will be continuous.

Every experienced beekeeper knows that it is possible for the queen to lay two kinds of eggs, so-called "fertilized" eggs and "unfertilized" eggs. The unfertilized eggs produce drones and the fertile eggs may develop into queens or worker bees, depending upon the food given them by the nurse bees. Each egg hatches after a period of three days. Then, for a period of three days, the young bee in the larval stage is fed a substance called "royal jelly," which is produced from glands within the head of the nurse bees. After the three-day period, if the young larvae are to become queens, they are continued on this food. If they are to be worker bees, their food is changed to a mixture of pollen and nectar.

According to a German scientist who has studied this question for 20 years, this change occurs during a period of about 12 hours, between the third and fourth day. The food given to the queen larvae is much more nutritious than that given to the worker bees, and the larvae develop faster and grow much larger than is the case with the worker bees.

In the normal development of the larvae of drone, worker and queen bees, the drones require approximately 24 days to develop from egg to adult, the worker bees 21 days and the queen bees 16½ to 17 days. For the first week or 10 days after the young worker bees have hatched, they remain in the hive, acting as nurse bees. After that time they learn to fly into the field and gather nectar, pollen and water, which are necessary as food. Apparently all of these substances are fed to bees in the larval stages. As adults, the bees feed only on nectar or honey.

One of the most interesting incidents in the life of the bees and the building up of the colony is the production of beeswax and the building up of the comb. There are a series of glands on the underside of the abdomen of each worker bee, and through these glands wax is secreted. It is at first liquid but forms into a thin scale of wax upon coming in contact with the air. These wax plates are carried forward to the jaws of the bees by the feet, and are then moulded into the wax cells in which bees rear their young and store the nectar as honey.

After the colony becomes crowded, which may be from March to May or June, depending upon whether the bees are in the South or the North, drone cells are built and drone eggs are deposited in them by the queen. Just about the time that the drones are fully developed, queen cells are built and fertile eggs deposited in them. When one or more of these queen cells is about ready to hatch, the old queen, with a number of the worker bees, leaves the old hive and flies to a new home where new combs are built in which to develop brood and store honey.

If nectar is being secreted by blossoms in the field, this condition will continue to exist, and only after the nectar flow has ended does the tendency to swarm out slacken. Just as soon as no more nectar is coming in from the field, the bees reduce the amount of egg laying and consequently the brood rearing. As colder days and nights come on in September and October, the brood rearing is completely discontinued, so that when the colony starts in for the winter period no young bees are being produced.

The bees then remain quietly clustered all through the winter period and begin the brood rearing cycle again the following spring.

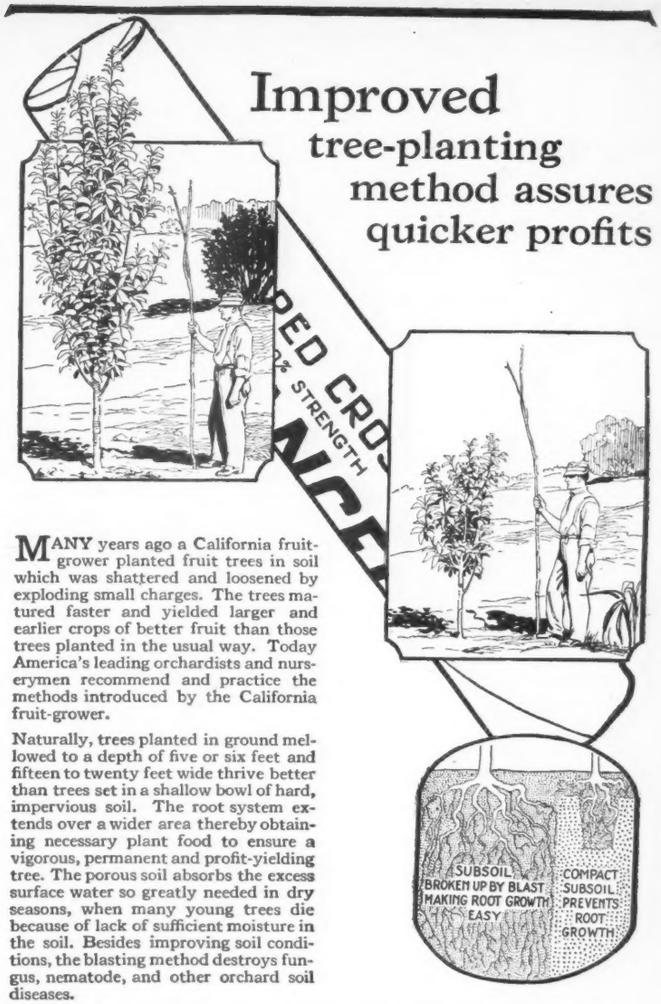
The Winter Cluster

There is a temperature below which individual bees are unable to move about. This temperature is approximately 40 to 45 degrees Fahrenheit. In order to prevent all the bees in the colony from dying out during the winter, as soon as the temperature goes down to about 50 degrees, the bees gather and form a cluster.

This cluster is a more or less compact mass of bees of a somewhat oval shape. The queen is within the center of the cluster, and on the outside masses of bees form an insulating shell. In forming the cluster the bees slowly gather over open areas on the combs, and if a cluster were to be suddenly broken open, each cell within the clustering space would be found occupied by a bee. They always enter head foremost and remain there for short periods of time, apparently inactive. As the temperature outside the cluster becomes colder, the cluster becomes more compact and the average temperature within the cluster becomes higher. This is probably brought about by body activities of the bees within the cluster.

In order to overcome the lower temperature outside, it is necessary for increased activity within the cluster to keep the average temperature above the vital point for individual bees. As the temperature outside the cluster becomes higher, the temperature within the cluster becomes lower, and when a temperature of about 60 degrees Fahrenheit occurs outside, the cluster slowly expands and may be completely broken.

Recent observations show that the bees remain clustered in exactly the same spot during the winter, and instead of the entire cluster moving to a new location, the bees leave the cluster at opportune times, fill themselves with honey and return to the old location.



MANY years ago a California fruit-grower planted fruit trees in soil which was shattered and loosened by exploding small charges. The trees matured faster and yielded larger and earlier crops of better fruit than those trees planted in the usual way. Today America's leading orchardists and nurserymen recommend and practice the methods introduced by the California fruit-grower.

Naturally, trees planted in ground mellowed to a depth of five or six feet and fifteen to twenty feet wide thrive better than trees set in a shallow bowl of hard, impervious soil. The root system extends over a wider area thereby obtaining necessary plant food to ensure a vigorous, permanent and profit-yielding tree. The porous soil absorbs the excess surface water so greatly needed in dry seasons, when many young trees die because of lack of sufficient moisture in the soil. Besides improving soil conditions, the blasting method destroys fungus, nematode, and other orchard soil diseases.

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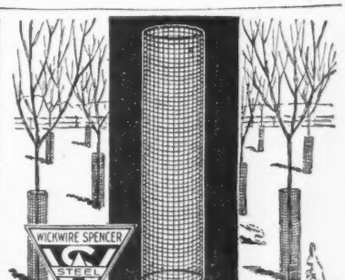

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41 E. 42nd St., N.Y. City. Dept. A
Gentlemen: Please send me fruit tree guard or literature according to box checked below.
☐ I enclose 15c in stamps.
☐ Send folder showing sizes and prices.
Name _____
Address _____

Engineering for the Fruit Grower

By E. W. Lehmann

When the Spraying Season is Over

TO DO a good job of spraying, the sprayer equipment must be in good shape, therefore it is well to be forehanded. As soon as the spraying season is over, see that the machinery is thoroughly cleaned and in good condition. Most spraying mixtures are hard on metal surfaces, as they cause rust or corrosion.

The job of cleaning a sprayer is best done by dismantling and thoroughly washing all the parts. After cleaning, apply a film of oil with a brush or cloth. This will keep the parts free from rust and the machine will be in first class condition when taken to the field next season.

Proper spraying is too important a job, and the cost of new spraying machinery is too much to neglect the machinery on hand. It should be remembered that the amount and quality of the fruit harvested depends almost directly on the effectiveness of spraying, and the effectiveness of spraying is dependent to a great extent on the mechanical condition of the machine used.

Electric Pumping for Irrigation

THE EXPERIENCE of California fruit and vegetable growers in the use of electric power for pumping water for irrigating points a way to the effective use of electricity in other parts of the country where electricity is being made available to farmers. Even in the humid sections, a pumping unit will prove to be a valuable form of insurance to the small fruit and vegetable grower.

In many sections of the Middle West the crop of berries is often greatly reduced by lack of rain. The overhead irrigation is an ideal system for the small grower. A motor driven pump will supply water under pressure for such a system. The application of electricity to irrigating has not only simplified the process, but has put it on a more economical basis. Small, inexpensive units may now be installed by the small farmer to supply all the water needed or to supplement from a well the water now being secured from an irrigating system.

Put Away the Tools

THE REAL value of proper care and protection to the tools is brought home to the farmer in the spring of the year when his plow works fine and when Jim Smith, his neighbor across the fence, wastes the greater part of a half day getting his plow to scour, because it was neglected and allowed to rust. The early fall is the best time to see if all the tools that need protection are put away for the winter. It is also a good time to check up on repairs and apply a coat of paint or grease where needed. If a convenient, satisfactory storage space is not available on the farm, some consideration should be given to the construction of a machine shed.

The first requirement of such a building is to give protection to the machines. It should be leak-proof and should have enclosed sides to keep out the moisture, poultry and farm animals. Too many people think they have taken care of their machines when they put them into an open shed with a dirt floor. In many cases the machines in such a place stand on ground that is wet, due to poor drainage, and in addition to rusting, the machines serve as a roosting place for the poultry. Machines housed under such conditions would, no doubt, be as well off if left out in the open.

According to W. A. Foster, in charge of farm architecture at the Illinois Experiment Station: "The size of the machine shed is best arrived at by spending a half day, if necessary, in grouping all the machinery close together on a level plot of ground and then measuring the space that is occupied. If a one-story shed is desired, it may be kept free of posts by making it 28 feet or less in width." A combination machine shed and shop is a desirable type of building to have on the farm. If a shop is made as a part of the machinery shed, it should be tightly constructed so that it will be made comfortable for winter work. The installation of a stove is sometimes necessary.

A two-story machinery building makes possible the storage of light machines and tools upstairs. It is also a good place to store seed corn or other kinds of seed.

Adequate machinery storage space not only pays dividends in increased life of the machinery, but also in a saving in labor and power, the most expensive items in farm production.

Spraying Taught in High School

THE VOCATIONAL agriculture class at Athens, Ill., is learning the value of spraying first hand, and also the requirements of effective spraying, by actually doing the job in the field with a machine purchased by the school board. A survey of local conditions made by the teacher showed that the fruit produced in the community was inferior both in quality and quantity. Further study disclosed that in most instances the spraying was ineffectively done. There were two reasons for this: first, the spraying was done when convenient rather than when needed; second, inadequate equipment was available to do the job effectively.

Through the efforts of the teacher, a power sprayer was purchased by the school board. It develops a pressure of 300 pounds per square inch and delivers five gallons of spray material per minute through the nozzles. The plan that is being followed is for the farmer desiring to have his trees sprayed, to hire the class to do the work under the supervision of the agricultural instructor. The charges to be made are to be based on the number of gallons of spray material used.

According to the instructor, the purpose in undertaking this work was to accomplish three things: first, to give the boys valuable and practical training in caring for the orchard; second, to render a service to the individuals of the community, who consider their orchards a side line, by providing a good quality of fruit from their own trees at a reasonable cost; and third, to make it possible for the boys in the school to make some money to be used for class expenses.

Every fruit grower can well afford to encourage this type of work on the part of their agricultural teachers. Many of these teachers are putting on tractor and gas engine short courses in which the boys and men are given an opportunity to study the principle of operation of the engine and to gain some practical experience in repair work. A greater knowledge of sprayer and tractor operation results in more efficient and more economical production for the fruit grower.

Spray Painting No Longer an Expériment

APPLYING paint by means of a spray painting machine is no longer a possibility but an accepted fact. Like a lot of other devices, however, that affect the amount of labor required to do the job, there are a lot of people who object to it and claim that the only satisfactory method of applying paint is by means of a brush. The same objections to the automatic factory machines that make a thousand and one things are made by those who did the job by hand. Many folks do not realize that greater production per person will result in more of the enjoyable things of life for everybody. It is reasonable to assume that if one man can paint four times the number of houses with a spray painting machine than with a brush, and if the labor charge will be spread over the larger number, that the cost of the paint job on each house will be reduced and more people will have their houses painted.

At a recent painting demonstration put on by a representative of one of the large paint manufacturers, the question was asked as to the effectiveness of the spray paint machine. The paint expert replied that there was no question but that a paint gun in experienced hands would apply paint equally as well as a first-class painter with a brush and would do from four to six times as much work. Paint can be forced into the open spaces on old boards much better with the paint machine than with a brush. I recently saw an old barn being painted with a painting machine where very good results were secured with just one coat, while if a brush had been used at least two coats would have been necessary to have any sort of a decent job.

While many painters hesitate to adopt this method of painting, many contractors and manufacturers are using it. Groups of farmers who have a rather large painting bill every few years might well consider it as a type of equipment that might be bought and operated on a co-operative basis, similar to the fruit growers' spray ring. The farmers who have had their buildings painted by this method are not only satisfied with the job, but say they saved considerable money.

The slogan of a few years ago, "Save the surface and you save all," has a lot of truth in it, because if the outside of the building is allowed to deteriorate, the life and value of the building will be greatly reduced. Too many people think of paint as a matter of adornment, something to make the buildings attractive, without giving much attention or consideration to its value in protecting and increasing the life of a building. The fall of the year is usually thought of as a good time to paint if your buildings need it. Don't delay putting on a coat, and investigate spray painting if you want to save some money.

Fruit Conference in Chicago September 9 and 10

A NATIONAL fruit conference is being called for September 9 and 10 in Chicago by the American Pomological Society. All branches of the fruit industry are being invited to send representatives, including producers, growers' organizations, state horticultural societies, produce dealers and allied industries.

Plans are to be formulated at this conference for wide publicity and popularizing of fruit with consumers in various ways. It is planned to institute an educational campaign pertaining to the health and food value of fruit, as well as methods of preparing and serving fruits and fruit products. The meeting will be held at the Sherman Hotel. Further information may be obtained from President Paul C. Stark, Louisiana, Mo., or Secretary H. C. C. Miles, Milford, Conn.

Not the Giving Kind

Teacher—Why, Jimmie, is it true that your mother has diphtheria?

Jimmie—Yes, ma'am.

Teacher—Bnt don't you know you mustn't come to school? You might get it from your mother and then give it to the whole class.

Jimmie—No, ma'am; it's only my stepmother, an' she never gives me nothin."—*Progressive Grocer.*

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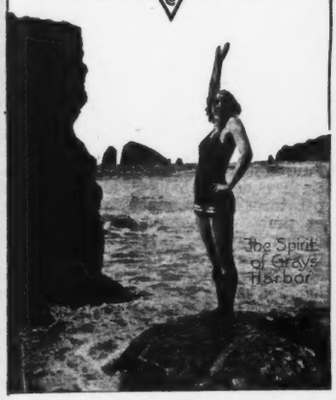

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California Fruit Growers' Exchange Entertains Swedish Crown Prince

A CO-OPERATIVE association had the honor of being the first host in California to the Swedish Crown Prince Gustaf Adolf and his royal party during their recent tour of that state. Officers and members of the California Fruit Growers' Exchange met the royal party at San Bernardino and conducted the members to various groves and packing houses in the similar welcome awaited them throughout the state.

The Crown Prince gave an informal talk in which he complimented the exchange officers and members on their work and accomplishments and on the influence which their organization is exerting in the development of co-operative marketing throughout the world. While Sweden has made some important advances in co-operative marketing herself, "there is nothing California can learn from Sweden," stated the Crown Prince.

The Crown Prince of Sweden (right), the Princess and President C. C. Teague in a California orange grove

vicinity, following which a dinner was served in the famous Mission Inn at Riverside. Governor Friend W. Richardson and other prominent Californians and members of the exchange to the number of about 200 took part in the tour.

It was Anders Norstrom, accountant for the exchange, who was instrumental in arranging the visit. Mr. Norstrom is 69 years old, has been an American citizen for 30 years and has been connected with the exchange for 25 years. He was a member of the Swedish Royal Guard that was on duty when the Crown Prince was born.

After Mrs. C. C. Teague, wife of the exchange president, presented Princess Louise with a huge basket of Sunkist oranges, the party took a 30-mile tour. The royal visitors were intensely interested in the highly developed citrus groves and packing houses. They greatly enjoyed picking some of the handsome Valencias that are now being marketed. In this connection, the Crown Prince used the only Swedish word he spoke on the tour—"forkyust," which, he explained, meant something a little better than delicious.

An informal six-course dinner was served, following which President Teague presided during a brief program of speeches. Mr. Teague in his introductory remarks spoke somewhat at length of the work and accomplishments of the exchange, which now handles 60,000 to 70,000 cars of citrus fruit a year, which has 11,000 members and which handles 75 per cent of the California citrus production.

Governor Richardson welcomed the royal party and assured them that a

Prize for Johnny Appleseed Letter

A PRIZE of $5 will be offered by the Johnny Appleseed Club, Waverly, Mo., for the best letter of 300 words or under describing the life and work of Johnny Appleseed. The contest will be conducted during National Apple Week. Those interested should write Walton Holmes Webb, Founder Johnny Appleseed Club, Waverly, Mo., before October 31, as entries must be made by that time. A committee of three judges will make the award on November 7. A copy of "The Helper" containing the story of Johnny Appleseed will be mailed to each contestant.

Credit the Apple

A new tailor in town used as a trade-mark the picture of a large red apple. Curiosity got the better of the village grocer and he asked the tailor why. "Well," said the tailor, "I'd like to know where the clothing business would be today if it hadn't been for an apple."

THE VERMONT State Horticultural Society will hold a summer meeting at the MacRae Orchard at Castleton Corners, 13 miles west of Rutland, Vt., on September 3. The program will consist of a series of orchard visits, basket lunch at noon, and short discussions by prominent authorities at various times during the day.

Pipe Smoker's Mother Happy at Son's Tobacco Choice

Wishes every day was Sunday so she could enjoy aroma of his tobacco all day

There is plenty of evidence to prove that the ladies are not averse to pipe smokers. Provided, of course, that the man in the case chooses the right tobacco.

The following letter from Mrs. Higgins of St. Louis reflects the pride and satisfaction of a mother who feels that her son has made a wise decision.

Read her letter—then show it to your wife:

Larus & Bro. Co., Richmond, Va.
Gentlemen:

Can a mere woman praise Edgeworth? When my sixteen-year-old son started to smoke, it was a pipe. I guess he tried all the brands of tobacco on the market, trying to find a mild, cool smoke. He gave up smoking in disgust,, saying he guessed he never would be a man if it depended on smoking a pipe. At last an old timer told him to try a pipeful of his Edgeworth. Now my son is never in too big a hurry to walk several blocks out of his way to get it.

I sometimes wish every day was Sunday so he could be home smoking, for the aroma of Edgeworth is delicious.

Yours very truly,
Mrs. A. Higgins.

While Edgeworth is in every sense a he-man's tobacco, the fact that its aroma is pleasing to the ladies signifies a pipe-smoker's good judgment. For if Edgeworth can give the ladies a share of the satisfaction that it gives to men, there must be something about it worth investigating—if you have never tried it.

To those who have never tried Edgeworth we make this offer:

Let us send you free samples of Edgeworth so that you may put it to the pipe test. If you like the samples, you'll like Edgeworth wherever and whenever you buy it, for it never changes in quality.

Write your name and address to Larus & Brother Company, 13-U S. 21st Street, Richmond, Va.

We'll be grateful for the name and address of your tobacco dealer, too, if you care to add them.

Edgeworth is sold in various sizes to suit the needs and means of all purchasers. Both Edgeworth Plug Slice and Edgeworth Ready-Rubbed are in small, pocket-size packages, in handsome humidors holding a pound, and also in several handy in-between sizes.

To Retail Tobacco Merchants: If your jobber cannot supply you with Edgeworth, Larus & Brother Company will gladly send you prepaid by parcel post a one- or two-dozen carton of any size of Edgeworth Plug Slice or Edgeworth Ready-Rubbed for the same price you would pay the jobber.

[*On your radio—tune in on WRVA, Richmond, Va.—the Edgeworth station. Wave length 256 meters.*]

Profitable Poultry

By Ralston R. Hannas

House the Pullets Early

PULLET eggs have doubtless begun to appear in some flocks, or if they have not yet appeared, they will soon. Right now, then, is the time to have your laying house ready for these new pullets and put them in it. There are several reasons why it is good practice to house these pullets early, providing, of course, they have made good growth and have not started to lay while they are small and undeveloped. The reasons for housing early are:

1. You can mature them properly. It is not a good plan to force the pullets for egg production as soon as they begin to lay. Unless the birds have obtained a satisfactory weight—at least three and one-half pounds for Leghorns and five pounds for the heavier breeds—they are apt to lay heavily for a short time, then "go to pieces," that is, moult and stop laying. Egg laying is a strain on the body of the fowl and unless she has sufficient reserve in the form of body flesh, she is not likely to stand up under the process.

It is better, then, unless your birds measure up to the weights given above to hold them back for about three weeks from laying eggs, in order to give them a chance to put on the necessary weight to carry them through the season of heavy production. These eggs will more than be made up later on. This is done by limiting the amount of mash they get and feeding heavily of grain. The mash may be kept before them for only an hour or two a day, and efforts should be made to get the birds to eat all the grain they will. If they can be gotten to eat 14 or 15 pounds of grain for every 100 birds, so much the better. It will probably be difficult to get them to eat as much as this at first. They must be coaxed along by starting in on, say, 10 pounds and gradually increasing this amount. After about three weeks, the mash can be left in front of them all the time and the same feedings of grain can be continued.

2. You will have better health in your flock if the birds are compelled to roost in houses fairly early. If they are left out and permitted to roost in the trees until late October or November, they are likely to become affected with colds, roup or canker. This will, of course, lower their vitality and productive ability, and some of the birds may be good for nothing the rest of the year.

3. You will have an easier job of teaching the pullets to use the nests than if you wait until a number of them have begun to lay and are laying heavily before putting them in the houses. This is especially true if trapnesting is done.

4. You will prevent early moulting to some extent. This does not mean for birds that were hatched early, but those hatched in the normal period, April and May. When pullets are allowed to stay on range after they commence to lay and are then put in the laying houses, there is often a moult. Housing them before they lay will prevent this moult.

Preparing the House

Before putting the new pullets in the house, make sure it has been thoroughly cleaned. Remove all the nests from the house, clean them, spray them with a coal tar disinfectant, and allow them to dry out in the sun. Take out all old litter, sweep the floor, sweep down the walls, replace any glass window panes that are needed or any muslin curtains that are torn, and disinfect with a good coal tar disinfectant. If desired, the house may be whitewashed, using disinfectant in it. A five per cent solution should be used. Dropping boards and roosts should receive particular care.

Replace all movable fixtures and place fresh litter on the floor. Straw is the best. As the pullets have not been used to scratching in straw while they have been on range, do not have the litter too deep to start with so the birds will not be able to find the grain. Use barely enough to cover the floor at first, then gradually add more after the pullets get the idea of locating their grain, until there is a depth of about eight inches. See that the drinking pan holds water, that the mash hoppers are in good condition and that there is sufficient eating space for the number of birds that are to be put in the house. Provide at least one foot of hopper space for every five birds. Thus, if 100 birds are to be placed in a house, see that there is 20 feet of hopper space. There should be two hoppers, each five feet long and permitting birds to eat from both sides of the hoppers, to provide the necessary space for this unit.

See that there are no holes in the roof, that the rat holes are all plugged up, and that the house is ready for the pullets in all other respects.

Sprouting Oats

BY THIS time, in many sections, there is very little real tender, juicy green food for the chickens; what there is, is more or less tough. It is, therefore, a mighty good plan to provide some sort of greens both for the new birds just coming on and for the old birds that are just "going off." Sprouted oats is as good a means of doing this as any way.

The oats are simply soaked in warm water or water at room temperature in a tub or pail for 24 hours. At the end of this time they are spread on trays of any convenient size, say two feet square, and kept at room temperature at this time of the year. Later, when it gets colder, the trays should be put where the temperature is between 65 and 70 degrees.

Trays should have holes bored in the bottoms to permit the water to drain off in order to prevent moulding. A good plan is to build racks for the trays to hold any number; seven is a good number—one for each day of the week. There should be a distance of seven or eight inches between trays. Racks are not necessary, as the trays may be set upon the floor—they are more convenient, however.

The oats should be spread on the trays to a depth of about an inch and a half. They should be ready to feed in six or seven days. They may be any length when fed, though it is desirable to have a growth of about three or four inches before feeding. It is all right to feed them when they are only an inch long. In any case, however, it is better for the birds if the shoots are green. As to the amount to feed, this must be determined by the way the birds eat it; what they will clean up in about 15 minutes is sufficient.

If any mould should appear, disinfect the trays after the oats have been fed, or put about five drops of formalin in the pail of water in which the oats are first soaked. It is not necessary to sprinkle the oats after they have been put in the trays more than twice a day. Use water at room temperature now and warm water later when the weather is colder.

The Layers

EGG PRODUCTION is dropping off rather rapidly just now and the best you can do is to make this drop as gradual as possible, for it will drop in spite of you. One of the best ways to try to do this is to cut down the amount of grain fed to make them eat more of the mash, which is the real egg food. Grain at the rate of five or six pounds per 100 birds, if the hens are in good flesh, will tend to induce the proper consumption of dry mash. If they are not in good condition as to body weight, don't cut so much—feed about seven pounds to the hundred. If they are thin, and the grain is cut too much, a moult will likely result. This is what you want to stave off as long as possible.

This condition of body weight can easily be told by handling some of the birds. If the breast bone is very prominent, the bird is too thin for this cut in grain, while, on the other hand, if the breast bone is not prominent but is fairly well covered, it is safe to make the cut in grain. Of course, it is to be expected that they will not be in such good condition as they were earlier in the year before they had laid so much, but it will be found that the best birds are in the best condition.

A little milk mixed in the dry mash, enough to make it a little more than crumbly, will be relished by the hens. Mix up the mash like this for them once a day—what they will clean up in 10 or 15 minutes. This will help to hold up production.

Rambles of a Horticulturist

(*Continued from page* 19)

of early fall resulting from the cold air that comes down out of the mountains that makes such plants so successful in southern Idaho. The Sleep house was quite cool on the inside the day I visited it, although the temperature was high outside and all three doors were wide open.

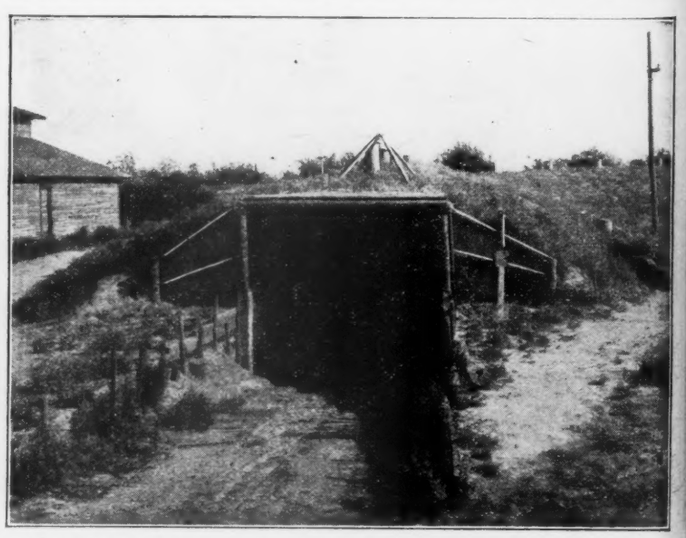
Visit Steel Orchards in the Evening

After the busy afternoon, we had dinner with the Parma Chamber of Commerce. Feeling that we had not had a sufficient workout, the energetic Idahoans took us out in the evening to the Steel orchards, which are located on a plateau from which there is a wonderful view of the Snake River and valley. Mr. Steel planted his first apple tree in Sweden 68 years ago. He is one of the pioneer planters in Idaho and his first plantings were made in that state 25 years ago. He has between 300 and 400 acres of apple orchard and 200 acres of Italian prunes. He has a prune evaporator of his own. His fine orchard of 11-year-old Delicious trees will bear 30 boxes a tree this year. His apples are pruned with quite open tops. The trees are planted 30 by 30 feet, which Mr. Steel recognizes is quite close. He normally sprays four times for codling moth, but he is spraying five times this year because of the severe infestation. He uses four pounds of arsenate of lead to 200 gallons of water. Portable spraying outfits are employed.

After it got too dark to inspect the orchard, Harry Sabin, of the Idaho State Department of Agriculture, explained the standardization and inspection service for fruits in Idaho. The state has fixed grades for all of its important fruits. These grades have been stabilized and are changed as little as possible. The same requirements as to color, etc., are maintained from year to year. Thus, while the percentage of each grade may change materially, the standards for each grade remain the same from year to year. This policy has established confidence in the markets for the Idaho grades. All apples must be inspected before leaving the state. In effect, the Idaho system is one of compulsory grading according to the state standards.

Conclusion

Southern Idaho has some excellent fruit growing possibilities. The possible shortage of water in the Boise Valley some seasons is a factor that must be contended with. The climate produces apples of high color, and this section is considerably nearer the eastern markets than Oregon and Washington and has appreciably lower freight rates. The fact that air cooled storage plants can be used successfully is a distinct advantage. Soils vary in type, but in general they are well suited for fruits. The low temperatures of some winters are a serious factor. During 1924-25, for instance, the temperature suddenly dropped from a fairly high point to 27 to 35 degrees below zero Fahrenheit in different localities. Such sudden changes and low temperatures cause much winter killing at times. It should be possible, by proper methods, to reduce the damage to relatively small proportions in most seasons. The orchards should be handled so as to encourage early maturity of the branches and twigs. Experiments recently reported from some states indicate that roots are quite sensitive to low temperatures and that winter killing often results from root injury rather than top injury. It might help the Idaho growers in handling this problem if they would grow heavy cover crops around the trees or apply a mulch under the trees in the winter so as to protect the roots from extremely low temperatures and sudden changes in temperature.



A typical air-cooled storage plant of the kind commonly used in southern Idaho

Baldwin Buys Out Partners

O. A. D. BALDWIN has purchased the interests of R. W. Ackerman and R. C. Whitten in the Baldwin-Whitten-Ackerman Nurseries of Bridgman, Mich. Hereafter the firm will be known as the O. A. D. Baldwin Nursery Company. O. A. D. Baldwin is president and his younger brother, G. W. R. Baldwin, is secretary and treasurer. The nursery specializes in small fruits, although other nursery stocks are also handled

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